



CHEETA L

JOURNAL OF

The Wild Life Preservation Society of India

Vol. 18

March & June 1977

No. 3 & 4

Sambar stag : Ranthambhor

—Photo by M. Krishnan



Members and Subscribers are requested to note that all yearly subscriptions fall due on 1st of April each year. They are requested to pay in time so that Cheetal may be sent to them regularly.

Change of address should be intimated at the earliest to prevent Cheetal being lost in transit.

Honorary Secretary.

CHEETAL

Journal of The Wildlife Preservation Society of India

Vol. XVIII

March-June, 1977

No. 3 & 4

Obituary

Shri P.D. Stracey, the founder Vice President of the Wildlife Preservation Society of India breathed his last on 9th June, 1977 at Bangalore — his residence after retirement from the Indian Forest Service. He also worked as Wildlife Advisor to the Emperor of Ethiopia.

Sri Stracey was an eminent Forester who rose to be the Chief Conservator of Forests, Assam and Director of Forest Education, Forest Research Institute and Colleges, Dehra Dun. Among the Indian Forest Service men he was an exception being interested not only in Flora but in Fauna also. He was a doyen of Wildlife Conservation in India. As Director of Forest Education he introduced Wildlife Conservation in the syllabus for the Indian Forest Service probationers. He was a sportsman par excellence and generous and helped the poor in need.

He authored several widely appreciated books, e.g., 'Elephant Gold', 'Wildlife Management in India', and 'Tigers'. He was not only the founder of the Wildlife Preservation Society of India but also continued as its Vice President till his last and inspired many to work for Wildlife Conservation.

The Society mourns his death and places on record its deep sense of sorrow and grief and conveys sincere condolences to the bereaved family.

He leaves behind his wife, brothers, friends and a host of admirers to mourn his loss.

CONTENTS

		PAGE
1. The Man-Eater of Mandakata	S. N. Roy I.F.S.	3
2. Grass-Tracer by Saroj Raj Choudhury, Field Director, Simplipal Tiger Reserve	...	28
3. Planning for a 'Project Elephant' ? by P.D. Stracey	...	32
4. An Afternoon with Wild Dogs by Peter Davidar	...	35
5. When Orang-Utan panicked Zoo Staff by R.S. Bhadauria, I.F.S., Director, Kanpur Zoological Park, Kanpur	...	38
6. Langurs' Association with Chitals by B.S. Gurm, H.P. Agrawal, P.L. Kankane, Zoological Survey of India, 1544-A, Napier Town, Jabalpur, M.P.	...	41
7. Fauna of Corbett National Park—Introduction by B.S. Lamba, Zoological Survey of India, Northern Regional Station, Dehra Dun	...	42
8. On Herd-discipline in Indian Elephant, <i>Elephas maximus</i> Linnaeus by G.S. Lamba, Northern Regional Station, Zoological Survey of India, Dehra Dun (U.P.), India	...	48

The Man-Eater of Mandakata

S. Deb Roy I.P.S.

It was during the small hours of the morning of November 30th, 1975, that I had an unusual dream. I am not one of those, who dreams too often or attaches any importance to the interpretation of any dream. But, as I mentioned earlier, the dream was rather peculiar; I saw myself, very vividly, walking on a timber bridge on a jungle road, with my double rifle, loaded and ready. As I neared the opposite end of the small bridge, I located the head of a tiger in the bushes below the bridge at my right, in a crouching position with ears tucked low and back, at the ready position to pounce. Even in my dream I knew for sure, the tiger was preparing to spring as its body (as far as I could see in the low cover) was quivering back and forth with its tail twitching. I stopped and faced the tiger, staring straight in its eyes, meanwhile switching on the safety of my double rifle and very slowly bringing it up to my left shoulder. I know very well that at such close quarters any quick movement of mine may result in a charge.

Even in my dream, I thought, I could sense hesitations in the mind of the tiger and I decided not to fire, in case it changes its mind and retreats. But moments later, the tiger grimaced, growling viciously and sprang. In a flash I swang my rifle and fired. The tiger was hit in mid-air and went sprawling back, with the impact of my bullet on to the dry nullah bed. He rolled there growling viciously and I fired again, on its head this time, and moments later it lay still.

I woke up immediately afterwards and heard crows crowing and some birds chirruping in that slightly chilly early hours of late November morning. It was 5 A.M. in my watch, which meant, it was still dark outside. On the previous day. I had received my orders to join as Field Director, Project Tiger, Manas, and I smiled to myself saying, "Hay boy, subconsciously you want to be back at your old game and passion again!" I looked at my wife, who was fast asleep still and started to analyse my mind!

Yes, I used to hunt quite a lot, but that was quite sometime back and in a very choosy manner. I have shot practically all big game of our jungles, but almost every dangerous animal, that I shot, had been a scourage to human life or property. As I joined my service in 1958, wildlife was already at its dwindling low ebb and from the very beginning I was quite aware of the necessity of conservation and I was proud that during my hunting career, I have never shot anything wantonly. Hunting is an art, if one can take to the real sportsmanship of it and the tough lonely life of a Forester can be really the envy of others, once the intricate art of hunting can be mastered. There cannot be a more rewarding satisfaction, if the hunter's reading of nature and its numerous untold signs can be picked up correctly and ultimately lead to a correctly anticipated situation. With

modern arms, the hunter's quarry does not stand any chance and successful shooting needs only some fast accurate shooting and strong nerves. It's practically a matter of moments to shoot an animal dead with a suitable weapon but it is the pre-shooting paraphernalia that the hunter actually enjoys and probably not as much as the shooting itself.

There are two conflicting minds in me. The first will excite me, even provoke me to go hunting and I may succumb to the temptation, but as the successful hunting is over, be it small feathered game or dangerous big game, I detest sometimes even slightly hate my ability to hunt. Very seldom, I touch my shot dead quarry, as I feel very strongly haunted by a guilty feeling, when my quarry lies before me dead, smeared in blood. And probably due to this duplicity in my character, I feel happy, very often, when I miss my shot or cannot reach my prey because of wrong reading of tracks, that had been left by it, or smothered by nature or when my prey outwits me, which, of course, is very seldom..

Indeed, it is very difficult, if not impossible, to identify the "killing" instinct and the "preserving" instinct so closely and intricately wound in my mind. But then, I had actually left serious big game hunting a couple of years ago and due to the demands of my service and my queer set up of mind, I had very nearly hung up my heavy rifles.

But this dream—during the small hours of the morning somehow made me feel, call it my sixth sense or instinct if you so desire, that I may have to undertake another piece of adventure shortly! When my wife woke up a little later, I told her that I may have to take up my heavy guns again—and this time against a Tiger! She presented an unbelieving smile.

But exactly 50 days later, on the 19th of January, 1976, I received summons from my Chief Conservator of Forests to rush up to North Gauhati side with the given object of destroying a man eating tiger. I had returned to my Head Quarters from a normal tour of the western part of my Reserve, about 150 K.M. away at about 11-30 A.M. I was immediately informed by Shri P. Lahan, Divisional Forest Officer in charge of Manas core area, that the Chief Conservator of Forests had sent in repeated urgent messages for the last two days of my absence, asking me to visit the area of depredation of a man-eater immediately and to take measures to destroy it.

Probably the most cherished ambition in the mind of any Indian big-game hunter, or may be for any hunter from any corner of the world, is to shoot a man-eater in his hunting career. But even so the prospect of an offer to shoot seven a man-eater did not seem to be that appalling, specially because, I was now entrusted with the noble job 'to preserve Tiger', the most magnificent carnivora of our jungles.

Naturally, I had mixed feelings. On one hand my killer instinct was all eager, ready to seize the rare opportunity and at the same time, I realised, even before I set out on my mission that once again I will be feeling sorry at the end, when my mission is successful and the mighty lord of the jungle lies before me—dead, paying dearly for his natural weakness of hunger, curiosity and probably daring. My “killer” instinct argued, “it is a duty to work for the benefit of mankind and in this case you are not going for pleasure hunting. Moreover, you shall have to match the cunning, perseverance and strength of the most dreaded animal of all—a man-eater. So why hesitate?” Naturally I had no mental defence to say “no”, besides, I was called on duty.

The man-eater was prowling in the area for the last two months and started killing villagers, who might venture to enter jungles for collecting firewood or for grazing their cattle. There was wide press coverage about the man-eater from the very beginning as the place was near Gauhati, the nerve centre of Assam, I had seen the accounts in the news papers which had mentioned in no uncertain manner that there are a host of tigers in the area, as supported by the evidence of local villagers. It was also reported that domestic cattle were being lifted by the dozen and people of the area were scared to death to move about even in the villages after sunset. The area was reported to be interspersed with hills and dales with villages dotted here and there. I myself had only driven through the area on a few occasions and had no intimate knowledge of the area, which is of prime importance for going in pursuit of a man-eater.

Meanwhile the Forest Department was not sitting pretty. Shri Mahanta the local territorial Divisional Forest Officer had visited the area himself and deputed some of his skilled staff to identify the tiger by making tracings of the pugmarks near a human kill. This was done with real skill and even a plaster cast of the pugmark was very nicely made which later on came very handy for identifying the actual animal. In Assam man-eating tigers have been captured in traps earlier, instead of destroying them outright and even in this case Shri Mahanta tried to do the same by employing skilled departmental trapper—Shri Giri, who was a Forest Guard, known for his knowledge of wildlife. But Giri, inspite of his lone daring marches in the area and laying out the trap with all the precaution of the world, could not get the intended results. But while Giri was anxiously camping in the nearby village, where the man-eater had killed two persons and was waiting for the man-eater to walk in, the cunning man-eater had struck elsewhere, and already claimed two more lives, bringing the total tally to 8. This naturally sparked off a lot of public resentment and the Chief Minister ultimately took a decision to proclaim the man-eater for destruction. As a result the man-eater of Mandakata was formally proclaimed for destruction with a reward on its head!

No sooner than the news spread that the man-eater was formally declared for destruction, numerous hunters from far and near started visiting the area in the hope of shooting the man-eater. Hunters from Gauhati and other nearby towns started moving into this area in jeeps and cars, fitted with spot lights, with the hope of getting a shot at it, as one P.W.D. road traversed the area, covered with thick jungles on both sides. Machans were put up on every possible tree, near where there was any hope of the tiger crossing and people sat up on those machans with ready guns night after night without any result. We were told later of one "shikari" sitting up on a machan with only one L.G. and a no. 4 shot cartridge, hoping to shoot the man-eater! This surely indicates that anybody in this area, having a gun, was trying to get the man-eater, without the slightest apprehension of the possible outcome of injuring the fearful man-eater.

Lahan and I reached Chariali at about 3 P.M. to be greeted by Mr. R.M. Das, the Conservator of Forests, Sri Mahanta and a host of other forest staff. Besides, Sri B.R. Phookan, an Honorary Forest Officer and a renowned big game hunter was there to accompany us in visiting the area and to plan up our future course of action. As I had no time to come prepared for a prolonged camping, which becomes necessary in such cases, (I had gone there only with the intention of making a preliminary reconnaissance and to study the area in particular) so that I could decide my course of action as may be required, on the spot. I had carried only a spot light and one rifle—my long, trusted companion—a 500/465 royal ejector double rifle, which had saved my life more than once in dealing with charging rogue elephants and another man-eater, earlier.

We saw parts of the area, in which the man-eater was operating that afternoon and had an evening drive on the jungle road from Bejera to North Gauhati in the hope of catching a glimpse of the man-eater in the powerful beam of my spotlight.

Needless to say that our hopes were belied on that cold January night. But on interviewing different groups of people in every village that we passed, I could see utter panic let loose by the man-eater amongst the villagers and as is natural in such cases, rumours were spreading by the hundreds about the whereabouts of the tiger as also about the supernatural ability of the cunning tiger. Almost every where it was reported that there were many tigers in the area besides quite a good number of leopards. People locked themselves indoors from sundown and would not move out even to attend to call of nature. But on my enquiry I could learn that all the human kills had been made during daytime in these jungles, though the tiger was in the habit of moving into villagers also after nightfall.

On close study, I could also see that the man-eater was active in an area of about 60 square miles of extremely difficult hilly tract, surrounded on all sides by a large number of villages. The hills were covered by very thick undergrowth and had medium to tall trees,

either in dense upper canopy cover or scattered here and there. In a large area the hills were also covered by thick bamboo and cane brakes. A large number of creeks and nullas emerged out of these jungles and water could be found almost anywhere, making it an ideal habitat with profuse cover for the tiger to move at ease and safely. As regards wildlife, the area hardly had anything besides a few barking deer and some wild pigs. Hunting by villagers and even by people from Gauhati was very common and as this area was an isolated patch of jungle having no link with any reserve forest on any side, it was natural that hardly any natural food for the tiger existed in the area. I could easily visualise that the tiger formed the habit of lying up in ambush near the edge of the jungle, when cattle grazed in the flat land and would secure his food when some cattle strayed too far away from the herd and nearer to him. On my enquiry I could know that in the past wild animals were quite plentiful in this area and leopards and tigers were also not uncommon. But during the recent past there were no tigers in the area and probably during the floods some tigers took shelter in this jungle, the area being quite close to a Brahmaputra island, called Kurua, where tigers are found. I failed to find out any reason for the tiger to turn man-eater, as almost everybody, who claimed to have seen the tiger said it was a huge tiger, without any apparent disabling injury.

However, that evening I could not keep my spirits very high, when I thought of the most formidable task of locating the man-eater in this difficult terrain, before actually trying to get at it, which in other words means to dictate terms on its own grounds, where he or she reigned supreme. But I decided to camp in the area and to take chance over the next kill, praying hopefully that it would not be another human kill. On enquiry, I was told that the last known kill (which was a bullock) was made only on the 17th, which meant that, provided it was made by the man-eater, there was all the chance that it would strike again on the 21st or 22nd. So I took leave of my Conservator that night, after we had a sumptuous dinner at his place and reached Barpeta Road, my Head Quarters in the early morning of 20th December. The warm bed was better than heaven after an extremely tiring 19 hours day which involved 450 KM of jeep driving on rough roads.

On 20th I got up late—naturally and finished some office work in the morning. In the afternoon I cleaned my old Jeffry's 404 on which I have more faith for accurate shooting than on any other weapon of mine. This was the rifle that I had purchased first and I never missed a shot with it. My only difficulty was that I had no fresh ammunition for any of my rifles and would have to depend on my age old ammunition, if the occasion so demanded, even face a charge. I had instructed the local Range officer to prepare a detailed contour map of the area and to mark the places, where the man-eater had killed its human victims. I had also asked him to locate the recent cattle kills and to show these on the map with date, so that some rough location of the tiger could be ascertained. Of course, the last kill was made at a place called Bhitorkhola and I thought the tiger should not be very far from this area.

On the 21st I left early and on reaching Gauhati collected the map, nicely prepared with all the information in it. I also saw the pugmark tracing and the plaster cast, which clearly showed that the animal was a fullgrown male tiger. The sequence of its last few kills also made me choose a place near Mandakata Tea Estate, where I expected the tiger to show up from 21st to 22nd. This place was about 4 miles from the place of its last kill. I had seen from the location of its earlier kills that the tiger was moving in the area in a clockwise direction and if it continued its movement in that direction, it should be around Mandakata and try to procure its next kill. Judging from the excellent cover and availability of water almost everywhere, I thought the tiger would not move very far, if not disturbed, trying to secure its next prey. In such areas it was natural that the tiger would probably locate some cattle and wait in the cover for a chance. Of course, people, by now, had become extra cautious and would not allow cattle to graze too close to the edge of the jungle. But even so there are people who become careless, when the tiger strikes either on cattle or even on human being.

After collecting my necessities, I made a bee line for Mandakata Tea Estate and finding the manager away, went out to see as much area as possible during day light. I met Giri, who took me to the places where two persons had been eaten up by the tiger. In one case the tiger had carried its "kill" some 200 metres, before eating the same. On local enquiry I could learn that the first two victims had not been eaten by the tiger, though he tasted some flesh, but later on he devoured almost the entire bodies of his human kills and left back only some portions of the palms, feet and skulls. In one case a strong Nepali young man with his 8 year old son was collecting firewood in jungle, close to his house, when the tiger appeared and pounced on the man. The young man, at the last moment saw the tiger springing and saved himself by falling down on one side. The tiger rolled down the slope, as it was on the slope of a hill, but came up before the man could escape and seized him in his powerful jaws and went up the hill. The boy, half dead with fear, ran to his house. When people collected later on and made an attempt to rescue the man after about 3 hours, they could only find the left overs at a distance of about 300 metres from the place of the killing.

While going with Giri on a jungle track to visit one of the places, where the man-eater had made a human kill, we saw the pugmarks of a young tigress. This was definitely not the animal, I was after, but it made my task still more difficult, as I would have to make a meticulous study of every kill or other evidence before trying to shoot the actual culprit. And as I had not seen the last kill of 17th myself, clouds of doubt rose in my mind, as to whether I was waiting for the actual man-eater. Of course, the pugmarks of the tigress were about 4 to 5 days old, which means she should be somewhere else at that moment. However, since there was nothing more, I could do, I decided to stay at the tea Estate itself for the night. The Manager Shri Sharma, a very hospitable man, returned in the

evening and immediately offered his warm welcoming hand with all necessary help. Though I carried all my food, he did not allow me to open anything and treated me to a good dinner.

After early dinner, I made a long jeep drive through the Tea garden jungles with my spot light, but could not find anything except locating 4 machans. These machans had been so ill camouflaged, that I could locate them from a distance, even without my spot light, and no wonder a tiger, who is a habitual prowler on the tracks of these jungles, would surely give a hearty laugh before avoiding the hunters, who must be shivering in the cold January night, waiting in vain for the tiger!

In fact it was futile to sit up on such machans, without knowing the location of the tiger and without any bait being tied. I had requested Shri Mohanta, Divisional Forest Officer, on the previous evening to arrange for some buffalo baits, if possible, as I thought, I would try this method also, which I thoroughly dislike, in case, I fail in my initial attempts for 2 or 3 days, on purely humanitarian grounds. However, that night I returned to my Tea garden camp at about 11-30 P.M. and Lahan joined me shortly afterwards. He had to stay back at Barpeta Road for some urgent official work and could not manage to join me earlier. He had no dinner and though I wanted to have some food cooked for him, he preferred to spend the night chewing some raw cauliflower, some carrots and radishes! We forest officers are habituated to raw deals like this and I think most others would be hardly able to enjoy their lives in such apparently difficult situations.

Early next morning at about 5 A.M. we were again on the jeep to have a look around. We lifted two persons from a machan, who had been up there all night and they told us that on the previous afternoon at about 3 P.M. a huge tiger was seen on that jungle road, walking away south by a tea garden labourer. They showed us some pug impressions on the hard road, but hardly anything could be ascertained. The tiger had crossed a nulla from where, we could not trace its signs any further. But on this nulla bed we found some old pugmarks of the tigress going west. As we drove back into the village, we came upon a jungle fowl on the adjacent harvested paddy land and I wanted to try my gun. I fired the left barrel of my shot gun, a Cogswell and Harrison, but missed, as the jeep was still moving. However, I fired my right barrel, when the bird flew and got him on the wing. This was good practice for me after a long time for quick shooting and I was quite satisfied with my performance. Accuracy and fastness of shooting depends largely on constant practice, but I have hardly had any scope or chance of such practice, as my movements are restricted now-a-days mainly in the Tiger Reserve, where shooting is prohibited. Even else where I don't feel like taking my gun out now-a-days, as we are involved in preservation.

Back in the tea garden, we had our breakfast with Shri Sharma and leaving all our guns and equipments in his safe custody, left for Gauhati to report to our Chief Conservator

of Forests and to do some official work. On our way, we were stopped at a place called Chandra by some excited Forest Guards and received the information that a big bullock of this village had been killed and partially eaten by a tiger in a sugar cane field at the north eastern corner of the village the previous evening. Lahan and myself immediately went to the spot for necessary examination of details. We saw from the pugmarks that the culprit was a big male tiger and the pugmarks were coinciding with that of the man-eater. The bullock was killed on a ploughed cultivated land and was dragged inside the sugar cane field, to the south, where it had a good dinner. Almost the entire hind portion with the thighs and the right front rib cage of the bullock had been completely devoured by the tiger, which made us to think that at least 50 KG of meat had been eaten up during the night. There could be only one decision at that moment, to construct a machan and to sit up over the kill, though I had never shot a tiger before from a machan.

But the first difficulty was to find a suitable tree for the purpose. There was no such tree anywhere nearby, except one good sized Bel tree (*Aegle marmelos*) situated at a distance of about 60 metres from the kill. There was no alternative, but to sit up on this tree, though 60 metres for night shooting is somewhat a deterring distance. This also made it obligatory to use the spot light, which meant, I had to carry the heavy 12 volt jeep battery on top of the tree. Anyway, since I thought it to be too dangerous to sit on the ground, waiting for a man-eater, I went up the tree myself and found out a suitable place at about 16 to 18 feet height, for constructing the machan. From that point the kill could be located, if the sugarcane were pressed on two sides to clear the line of view. I instructed the local Forester and Forest Guard, how to construct the machan and told them not to cut even one single branch, till we returned. I also instructed them to rub soil on the ends any freshly cut bamboo or timber that was going to be used for tying up the machan. Further instructions were given to put two or three stout pegs, flush with the ground to tie the kill tightly, so that the tiger could not move it and would be forced to eat it at the same place.

With all the instructions given and after another thorough scanning of the area, we left for Gauhati. At Gauhati we met the Chief Conservator of Forests and told him confidentially about the whole matter in all detail and requested him not to disclose it to anybody else. Our Chief Conservator of Forests, Mr. P. Barua, who was himself a good hunter, wished us all good luck. But we could leave Gauhati after finishing some work only at about 2-45 P.M. and rushed back to Chandra reaching there at about 4-15 P.M.

It was actually a trifle late already as sun sets about 4.45 P.M. and collecting our arms, ammunition and other equipment from the forest camp, left for the kill immediately without loosing any time. All our equipment had been brought to the camp from Mandakata, which is about 4 to 5 miles, by Lahan's jeep.

But what a disappointment waited there for us ! On our approach to the place we were shocked to see the kill dragged out of the sugarcane and lying in the open, closer to the tree, on which we intended to sit. On enquiry we were told by the Forester that the owner and his family members forcibly threw away the kill because they were afraid that the rotting cow flesh will render the sugarcane impure and they would be unable to sell the same ! What a stupid superstition !

At this, the very first thought, that crossed my mind was that all our attempts and taking pains, would go in vain and naturally my anger at this stupid action of the villagers knew no bounds. I cursed the few villagers, who had been sitting nearby and told them that they should themselves take care of the man-eater and shouted at the Forester and Forest Guard for not doing exactly what we wanted them to do. Totally disgusted, I called Lahan and started back for the jeep, which was about 100 metres away. Some of the villagers then pleaded mildly that the tiger would nonetheless come and we should take a chance. But I was in no mood to argue with them and to make a mockery of the attempt to shoot a man-eater like this and continued on my way back to the jeep without replying.

Lahan, who was still standing, called me back. As I halted, he joined me and pleaded that we should not go back like this, which, without fail, would be described by the villagers with imaginary colours added, and would try to malign the reputation of our department, which was already at stake. But, I argued, what was the fun of making a mockery of attempting to shoot a man-eater like this ? The tiger may come to the place where he had hid the kill, but from there he would definitely disappear without offering any chance to us when he would find his kill missing. Lahan replied that at least none could blame us and we would have done the best under the circumstances.

At this my thoughts ran fast, evaluating our chances of getting a suitable chance that evening and I thought, my only chance remained in the fact that the tiger would, in all probability, come back to the spot, at least out of curiosity, to have a look. Now, to approach the sugar cane field, he would have to cross a clear ploughed land of 40 to 45 metres width, if he approaches it from the nearest jungle towards the north. As an alternate route, he would have to cross a clear paddy field (harvested already) about 125 metres in width, if he chose to emerge from the jungle on the east. So there was a slender chance of getting a quick shot at the tiger, if he could be spotted, while clearing the opening on either side. I forgot to mention that on the south lay the village and towards the west lay clear cultivated land with a P.W.D. road running north to south at a distance of about 200 metres from the tree.

While thinking about this prospect, my temper cooled down and very reluctantly I agreed with Lahan to sit up on the machan.

Now, as I decided to sit up, I first selected my weapons. As it was extremely uncertain, whether there would be any worthwhile chance at all coming our way that fateful evening, I decided to go up rather light. So I discarded my 500/465 and the 318, which I would have carried in normal circumstances, and took up with me my long trusted 404 and the double shot gun. Lahan also discarded his 315 and his shot gun, as chances of using the weapons seemed to be really slender. However, we took the cumbersome 12 volt jeep battery and the spot light. In this context I should also mention that in that late cool afternoon the few villagers who remained till then had refused to drag the kill to its initial place, as they would have to have a bath to purify themselves for touching the dead cow! And it was impossible for 3 or 4 persons to drag the kill through the sugarcane.

Anyway, as we settled on the machan, the people below left talking loudly towards the west, on to the road and then south to the village. The jeep had left earlier with clear instructions about how to collect us on receiving our spot light signal. I sat up and then started scanning the whole area around us to locate the most likely path, the tiger may take to reach the kill. At this point, I should briefly narrate the surroundings to enable everybody to visualise our position in respect to the kill, the adjoining jungle and the villages.

The tree was located at the south eastern end of the ploughed field, which was about 120 metres in length and about 40 to 45 metres in width, to the north of this field was a small hill covered with dense jungle and bamboo. The edge of the jungle merged in a gradual slope to the clear ploughed land and was covered in the lower reaches mainly with thick grass and lantana. To the south of the ploughed land lay the sugarcane plantation, starting from a distance of about 25 to 30 metres from our tree. To the south of the sugarcane field lay the village. To the east of the tree lay a clear paddy land which was at a 3 to 4 feet lower elevation than the level at the west and the tree was right at the edge of the terrace. The paddy land embraced the Dhirgeswari hill in a huge semicircle and lay between the village and the hill. The hill was covered with very thick jungle. The width of the paddy land would be about 125 to 130 metres near the tree and gradually narrowed down to about 25 metres of a valley separating the low hill towards the north and the high Dhirgeswari hill on the east.

On a close detailed study it seemed that the tiger was more likely to come from the north, in which case it would be necessary for him to cross the clear ploughed land, the width of which was about 40 metres. A chance of the tiger, approaching from the east also could not be ruled out completely, but, in that case he would have to clear an open area, of 125 metres or more, which I thought would be discarded by him. The third possible approach was directly, from north of the tree and along the edge of the terrace, in

which case he would come right under our machan from where he would have to approach the kill. Judging all the pros and cons, it seemed more likely to me that the tiger would approach the kill (where he had left it) from the north, but not along the edge of the terrace. So I sat on the machan, facing west with the ploughed field stretching to my right forefront and the sugar cane field to the left forefront. The village Chandra was on my left and the high Dirgheswari Hill behind me separated by the 125 metres wide harvested paddy land.

Lahan joined me on the machan and we fixed up the spot light connections, loaded my 404 with 3 soft nose bullets, the shot gun with two long range L.Gs. and laid out everything on the machan so that in a hurry I would not make any mistake. The spotlight which was shining, was kept in a cloth bag and Lahan took charge of it. When we had finished everything and had settled comfortably, we signaled the people below (who were talking loudly till then, as per our advice) to move away, still talking.

As the people moved away, sudden silence engulfed us. The sun had already disappeared without our noticing it and darkness started descending quite fast. A large number of vultures had gathered all around and had settled in trees, nearby, with the hope of good a meal next morning, as our people had kept them away for the whole day. Now and then one or two of them were changing either the branches or trees amidst shrill protest from others who had perched themselves earlier and besides this there was almost complete silence.

I had a sure feeling that the tiger should come from the right forefront and hence discarded the other probable approach through the paddyland at our back, as it was not possible to have a sharp look out on both the sides. In case he came from behind, there was a chance that I would hear his steps and locate him, but otherwise I wanted to focus my full attention to my right forefront. And in case it chose to approach along the terrace, I should still be able to locate him under our machan. The machan was very well built and camouflaged so nicely that I had no fear of being detected by the tiger. As it started getting darker, I started to scan the surroundings thoroughly. There were 4 or 5 cattle tracks leading into the jungle to our right, from the ploughed land. These tracks must have been used by the village cattle for entering the jungle. I examined all these tracks and selected the last track, furthest from us, to be kept under constant vigil. This I did because I thought the tiger is more likely to come through this track, as he can have a look at the P.W.D. road from there, along which the people had left talking loudly. It is the habit of tigers to approach the kill making it absolutely sure that there were no men around before he would visit his kill. There are instances, when tigers would go along the jungle tracks, after the people had left to see if they had actually gone away, before returning to their kill.

As mentioned earlier, I felt that the tiger should appear at the last track, from where he can scan the whole area and see also the road along which the disturbing people had left for the village. I started surveying the whole edge of the jungle at my right and tried to have a mental picture of every bush, as I knew that in complete darkness, if the tiger appears anywhere along the edge of the jungle, it will appear to be another bush. So any new bush, if it would appear in darkness, should have to be very carefully observed. Presently I saw two lapwings moving in the ploughed land, one of which was near our tree, while the other was moving away from us. It was quite dark by now though all the bushes could be seen even in the light darkness.

Suddenly a number of vultures flew off some big tree to our right in the jungle. The vultures flew in different directions and settled in different trees in front of us or in the village towards our left. It was already too late and dark for vultures to fly and naturally I was on the alert. After a couple of minutes, another batch of vultures again flew off from our right in a similar manner, which I thought to be a definite indication that some predator was on the prowl. I touched Lahan and signalled my suspicions to him.

Again I started my regular visual scanning of the edge of the jungle. It was already dark and nothing could be clearly seen except a dim and blurred outline of the objects, I was trying intensely to see. I was becoming gradually doubtful about my own ability to locate the tiger, if it would really come out on that dark night and some half an hour must have passed, when suddenly the distant lapwing gave two or three very agitated alarm calls and flew off. I could not see the bird, in spite of my efforts. Immediately afterwards the lapwing close to our tree also gave similar alarm call and flew off. I could not see this one either. My scanning of the edge of the jungle was involuntarily distracted by this and as my gaze returned to the edge of the jungle moments later, I thought I saw a new bush very close to where the last animal track was. Straining my eyes as best as I could, I could not make out what it was. Though it seemed like a new bush, yet, I was not absolutely sure, if I had seen it earlier. It is obvious that at about 100 metres it was not possible on that dark night to make sure what it was. So when I saw no movement for about 10 minutes, I started gazing again along the edge of the jungle. But when ever my gaze was back to the suspicion arousing "Bush", I tried to see if there was any difference in its shape, which would make sure about its being an animal. But there was no movement, or at least even my keen eye could not detect any, even if actually there had been any.

A bus came along the road from Chandra side and went on its way to Mandakata, and I knew it was the 6 P.M. bus, which, I was told, was the last bus from Gauhati. It is a hard task to try to observe something in the dark night very intently for a long time and I started becoming a little dull in senses, which must have been the result of monotony.

I decided to wait till about 9.30, when I would get down and drive straight to Gauhati and reprot everything to my C.C.F. I also decided to request him to lift the proclamation on the tiger after the fixed period, which was till the next day, so that anybody and everybody should not try to kill a man-eater, which makes the animal more shy than usual and which involves lot of risk also. Besides, there was the chance that the tigress may be shot. While my mind went on straying out like this, my eyes kept on fleeting a steady gaze from the furthest end of the edge of the jungle to the nearest point and back.

Suddenly just as I returned my gaze to the farthest end, as usual, I thought the new "Bush" was not there. Instantaneously all my nerves become taught, and all my senses at the knife edge and then I saw the outline of some animal approaching the sugarcane briskly, already about 10 metres inside the ploughed land. Against the background of the ploughed land a very faint silhouette could be seen by me, but as I signalled to Lahan by touching him, initially he could not see it. There was a branch of our tree, which obstructed his view also and I pulled him towards me and pointed out the figure. At the same time I had already picked up my 404 and brought it in line and then signalled Lahan to put the spot light on.

By the time Lahan picked up and put the spot light on, the animal had approached within about 8 to 10 metres from the edge of the sugarcane. All the time I had anticipated that with the very powerfull beam of light suddenly focussed on its eye, the animal, if it was a tiger, should at least momentarily stop and look up at the source of the light, which would give me a momentary but sattionery target. Of course, I had to see the animal before I pulled the trigger, which is an unwritten rule of hunting. But as Lahan focussed the light, straight on the head of the animal, it turned 180° in a flash and ran in full gallop for the cover, which it had left a few moments earlier. But now I could see the tiger with its unmistakable stripes and the long tail. I lifted the rifle in my reflex action and followed the shoulder of the animal, as best as I could in that wavy movement of my target. About two hundred metres to our front there was a huge Semul tree and beyond this tree on a slope there was a house by the side of the P.W.D. road. As the tiger crossed the Semul tree and advanced a little further towards the right, I pulled the trigger. Before the boom of my rifle died down I saw the tiger going down in a cloud of dust and heard his terrifying roars, which indicated that I had hit him. The hasty shot that I took in this case was only because it was a man-eater. If I was to shoot any other animal except a man-eater, I would not have ventured to take such a hasty and uncertain shot. But since it was a man-eater, I had to take even the remotest chance of shooting it, as this may ultimately prove useful in saving humanlife.

I could see the tiger getting up, but he rolled on the ground again with frightening roars and I think I saw him trying to bite his own hind portion. As I saw this,

I also tried simultaneously to unbolt and eject the empty shell of the fired cartridge, but to bad luck, I could not open the bolt, as it had jammed. Lahan kept the focus of the spotlight steady so far and asked me to put in another bullet, as I had already hit the tiger. But alas, my attempts were in vain. As I tried desperately to operate the bolt, the tiger repeatedly got to his feet, but unable to move, rolled on ground and roared, I had heard tigers roar in close vicinity on a number of occasions, but had never heard such blood curdling roars, which was a unique experience. Failing to operate the bolt, I took the rifle up and hammered the bolt with my palm several times. The bolt opened and in a flash I put in another bullet in the chamber, but before I could even level my rifle, the tiger limped into the jungle and had disappeared, still growling intermitantly and moving further away noisily.

Had I kept a standby rifle or if the bolt of my 404 had not jammed, possibly I could have pinned the animal down, where he rolled over. Of course the shot gun was ready, but the animal was far out of range. So there was nothing else to do, except to curse our bad luck. As we waited for a while, a car came from Gauhtai side, and with spotlight beaming from side to side, halted near the P.W.D. road. The car then turned and started to approach towards us. So we focussed our light on them and shouted warnings, not to approach any further. However, later on we found Shri Dwipen Phookan, son of Mr. B.R. Phookan accompanied by some of his friends to be in the car.

As the car subsequently went away towards Mandakata, we signalled our jeep to come. The jeep came, but a large number of villagers followed the jeep on foot. We asked the people to go back immediately, as the tiger was only injured and not dead and when all had gone back, we asked for the jeep be brought near our tree. When the jeep came, we got down with our equipment and boarding the jeep went upto the edge of the jungle to know if the tiger betrayed its position. But there was no sign of anything and we all went to the village Chandra, where we would have to settle for the night. Dwipen, with his friends came back shortly afterwards and went back to Gauhati. I requested him to tell his father and also to ring up my C.C.F. and report to him about to-day's outcome. Dwipen immediately offered to come back early next morning for accompanying us in our pursuit of the injured man-eater. But I declined to take a "devil may care" type of boy, in his teens in such a dangerous pursuit.

A shop owner of Chandra offered his shop-house to us for our night stay and he and a number of other villagers went all out to extend their helping hands to us. We had all our provisions and after we were treated to a cup of tea by the shop-owner, we sat down to evaluate our loss and gain during the day, while our food was being cooked.

Thinking in retrospect, I found that a number of events, though apparently going against us, had actually helped our cause. Firstly if the kill had not been dragged

out of the sugarcane, I would have been waiting for the tiger to come to the kill and would have waited till it had started eating. Now, as I had thought earlier, I would have pressed the sugarcane on two sides and would have a narrow strip of line to use as my line of fire. In all probability I would have only a small portion of the tiger's body, exposed as my target, provided he was unable to jerk out his kill from the pegged position. Of course, I had expected to have the head exposed as my target, but there was a chance that a shy tiger would leave the kill very quickly on focussing the light. There was no doubt now, that this tiger was extremely shy, as was exhibited by his instantaneous flight on focussing our spot light. So it was more likely than not, that even if I could have seen the animal on the kill, I could not have had any possible chance to squeeze the trigger.

The tree on which we sat was at an uneasy distance, but this also helped in avoiding the tiger's penetrating gaze. There is one more vital point. If Lahan had not focussed the light straight on the face of the tiger and would have focussed the light at his back, I think the tiger would have dashed forward and taken cover in the sugarcane. The distance between the tiger and the sugarcane was so short, that I would not have had any chance at all. Again the tiger ran towards my right. Now, I am a left shoulder shot, as far as a rifle is concerned, though I shoot a shot gun from either shoulder, as my right eye is weak. Since the tiger ran to my right, it gave an easier chance for me to hit the target with an extremely hurried shot. Then again, we had reached the spot a little late, which offered us no chance to lift the kill and put it in the initial place, which, we would have possibly done, if time permitted. All these facts actually helped our mission. That night we had dinner at about 10.30 P.M. and went to sleep. At dead of night a scooter rickshaw and another car passed, which, we were told later, carried some more intending hunters, who came to hunt the man-eater.

Early next morning we had an excuse of a breakfast and went to the spot at 7 A.M. when the morning mist had lifted a little. A crowd of villagers followed us and some of them started going ahead of us. On our asking them not to go ahead and destroy the signs by trampling, some young persons started cracking jokes at us, as at first we could not trace out the actual place where the tiger had dropped down on the ploughed land. In fact the distance between the tree and the place, initially estimated by us was much short and when we fanned out a little, we found clear signs, where the tiger had rolled down on the ground and later limped into the jungle. On pacing out we found the distance, at which I had hit my running target, to be a little over 90 metres. Considering all the aspects, I thought it was a lot of luck, that helped me in hitting my target. Firstly it was shooting during the night, secondly the tiger must have attained his full speed of about 69 K.M. per hour and thirdly the distance of 90 metres was almost staggering! Hitting any part of my target in gallop under these conditions would probably be no mean achievement by any

standard of fast shooting. There was profuse blood splashed on ground, which was observed all along the tiger's trail. We found out the place from where the tiger had turned back and found that the tiger in its first jump had cleared more than 17 feet of ground ! Then on, there was clear sign of his galloping. The people around us had come in again and found out some splinters of bones and some flesh which had been torn off by the bullet. Meanwhile, some people went to find out the kill and shouted from there that the kill had been dragged away from the spot. Before we went to investigate, some enthusiastic people shouted from the terraced paddy land on the east that the kill had been eaten away by another tiger, which they immediately swore to be the mate tigress of the one, which had been injured ! On our close examination, we found it to be a big male leopard, who had dragged the kill to distance of about 200 metres and had eaten away the major portion of the rest of the kill. This was really very interesting.

Anyway, we did not spend much time on the kill as we had the most dangerous game of all, pursuing an injured man-eater on foot in thick cover. It had been decided earlier that Lahan would be accompanying me in our pursuit. I myself had earlier tracked another man-eater in similar jungles and very nearly lost a companion, who ran diagonally as the tiger charged. The tiger followed the man but fortunately I could fire a shot, just before the tiger was virtually on top of the man and could divert the tiger in that case. From that day, I had thought of not taking any companion while pursuing a tiger on foot. But Lahan was an exception. I knew better than anybody else that he would not leave me alone in an emergency. But when we entered the thick impenetrable cover and advanced a couple of steps, we realised that it was virtually impossible for us to go through the jungle, unless someone goes on either pressing the bushes ahead or cutting the same. Nothing was visible even within couple of feet and the jungle cover was so thick that it was hardly possible to swing the barrel of the gun without obstructions. This was really very dangerous, as we were expecting a charge any moment from any direction. So after some consultation both Lahan and I decided to take along one more person with us, whom we decided to keep in between two of us, while he would advance slowly cutting the jungle in front. The villagers were all very courageous and keen to join us and we ultimately selected one person from them, who had a good shikar experience in his life.

In pursuit of dangerous animals, it is always unwise to have companions, as in the face of a sudden charge, it becomes the imperative responsibility of the hunter to see to the safety of the other person. But in the present case there was no alternative, but to take the extra responsibility.

As we started moving into the jungle, it became apparent from the very beginning that the tiger was badly hurt and was moving only because of his brute strength. Every few

paces he dropped to the ground and rested before moving further. Every such resting place was marked by pools of partially dried blood and we got two more splinters of bones again. From the blood marks on the grass it was also seen that injuries had been caused on both its flanks, which meant that the bullet had come out of its body from its left side. But absence of any froth in the blood indicated that the bullet had not injured his lungs, which meant that I had missed his shoulder or chest region and had hit him elsewhere. Our movement was naturally very slow in that thick ground cover, specially because the track went up the gradual slope of the low hill and we had to be extra cautious with the possibility of a charge from higher ground. In a number of places the tiger had virtually dragged himself up the slope and in the beginning we thought that the animal could not have gone very far. As we approached the top of the low hill (about 150 feet high) the cover was found to be a little open and we could cover ground a little faster. It seemed the tiger revived a little and went down the slope without much resting. The blood marks had also gradually become scarce now and at about 10 A.M. we emerged in the narrow valley, which separated the low hill and the steeply rising high Dirgheswari hills. The villager, who was acting as our tracker, found out the track, trailing up the Dirgheswari hills and said that the cover in this hill was thicker, with lot of bamboo and cane-brakes and he suggested that some two more persons should be brought to clear the jungle as it was impossible to clear the undergrowth all alone. Besides, he said, he had not eaten anything in the morning and would have to have a meal before he goes on further, as it may take the whole day.

So Lahan and myself went back to the village and had further discussions amongst ourselves as to the desirability or otherwise of taking more persons with us. But it seemed, there was no other way, but to take help from the villagers. We consulted some villagers in an attempt to get some buffaloes, who could have been utilised in driving away the tiger, but none would venture to offer his buffaloes for such purpose. The area was of such a terrain that use of elephants was also not possible and over and above one has to have properly trained, elephants for such purpose, who would face firmly a charging tiger. We had a cup of tea and our previous companion joined us quickly with two other young men, whom he selected from the crowd. All three carried a Dao and a bamboe pole about 7 to 8 feet in length and we came to the base of the Dirgheswari hills, where, we had left the trail earlier in the morning. The track now winded up the steep slope strewn with various sizes and shapes of big boulders in thick cover. As we all collected at the base and were discussing about the probable hide out of the tiger, a crow gave some agitated calls, far away towards our left on the hills at a considerable height. From this I thought, the tiger could have been somewhere in that direction. But the initial track went up towards our right,

Anyway, going became still more difficult and slow because of the cover and the boulders, as the tiger could have hidden himself behind any of these big boulders and charged down the slope on us, as we came nearer him.

This time I carried my heavy 500/465 rifle with me as I thought that in case of a charge, I will have to stop the animal very close, which a shot gun would not be able to do, even if my shot went home. I gave my shot gun to a Forest Guard and asked him to be at my back as a standby weapon carrier. Lahan carried his own double shot gun. Out of the three men accompanying us, one was using his bamboo pole to press down the under-cover, when the other two were clearing these, either by cutting or by pulling. Every now and then one would go up a suitable tree or a bamboo clump to see ahead, while the others were at work. Lahan and I guarded the right and left flank respectively at a distance of 4 to 5 feet, while the man was always in between two of us. Every step had to be taken with all our nerves taught in anticipation and with all the carefulness in the world. The track zigzagged its way up for about 300 or 350 feet and then took a turn towards the left along the contour. While climbing the tiger had fallen down the slope in 3/4 places, which was betrayed by the marks, it had left on the ground. After the initial climb, the animal now took a regular game trail through thick grass and bushes, but more or less on level ground. As we advanced, we stopped repeatedly and tried to hear any sound in front. Gradually we approached a ledge of the hill, which formed a depression ahead of us. We were now on the South-western aspect of the hill and the place was very cool and moist. Our experienced friend now expressed his opinion that the tiger had taken shelter, probably in the depression, which, he said, to be a wonderful niche for the animal. As we gradually neared the depression, we approached an extraordinary thick grass cover and here we found fresh blood marks, which had definitely been only minutes old. I could smell the tiger also for the first time.

Ahead of us, within about 35 to 40 feet, there was an outgrowth of the hill and we had to go round this outgrowth towards the depression. Somehow I felt that the tiger could lie in wait for us around the bend and I halted here to discuss our strategy. As we started our conversation, there came a low but unmistakeable growl of the tiger, ahead of us. The first growling could not be identified by the trackers and I signalled them to a silent halt. Immediately afterwards, the first low growl was followed by another low but clear growl. All my attention was to my front as I levelled my rifle and waited in anticipation of a charge, but the charge did not materialise though some fierce growling followed. After a while, everything became quiet and very slowly I looked towards my right to see only Lahan standing in ready position. As I looked for the other men, gradually, I located them up in some trees behind us. Even my gun bearer was up a tree, staring down on us. Very

slowly we back-stepped and withdrew to take up some better position and to discuss our strategy.

As nothing could be seen ahead of us in thick cover, I decided to climb up the outgrowth and try to see if anything could be located from there. Lahan was to take up position a little higher up on a suitable big rock and wait. So Lahan went up a rock as I guarded the track first. Then I climbed the outgrowth slowly, which was an arduous job, as Lahan covered me.

But even climbing up the outgrowth, which was nothing but a huge rock, about the size of a small house, I could see nothing below. I, then, signalled the people on trees to throw some branches towards the hide out of the tiger. As the men broke or cut some branches of the trees, the tiger started growling again. And as the branches were thrown, he gave a out fierce loud growl. At times I could see some movement of branches in the bushes below, but could not see as much as a hair of the tiger below. Later on I started imitating growling of the tiger, to which he responded readily and fiercely, but showed no sign of his moving away or charging us. This must have continued for about half an hour and ultimately, I asked Lahan to fire some shots at the bushes. Lahan fired one, and then another shot at the bush, but there was no result. When no result was obtained after another round of stoning, I decided to fire a shot of my heavy rifle, as we could do nothing else, unless the tiger either charged or moved away. As I fired, the tiger roared in anger and moved noisily out from its hideout and approached the depression ahead. Lahan caught sight of some movement in the depression and fired one L.G., but he said the tiger was out of range (about 100 yds.).

We could hear the tiger going on the next ledge of the hill, past the narrow depression, which was in thick cover.

It was already past 2 P.M. and both I and Lahan felt the pangs of hunger, as we had practically gone without any food till then, save two cups of tea and some biscuits. Lahan lighted a cigarette and I also took one from him, even though I had left smoking sometimes back, to settle down and discuss our next move. From the behaviour of the tiger, it was apparent that the tiger was probably incapacitated very severely, which made it really difficult for him to press home a charge. We also felt that the tiger could not have moved very far away. But meanwhile, there was complete silence, after we had heard the tiger going up the ledge across the depression. After a little rest we decided to advance upto the depression and have a look around. So we advanced upto the bottom of the big rock, where the tiger had taken shelter and found that there was a small cave under the outgrown rock, where the tiger had been probably resting. There were fresh blood marks here and some hair, sticking on the rocks. All around there was thick cover of bamboos, canebrakes,

interspersed with other bushes. We went upto the depression from where the trail again went up the ledge in very steep climb. There were big boulders everywhere and dense cover, which made us stop on the track and it was fortunate that we did so ! Looking around us, we decided to retrace our steps a little and climbing up for some distance on this side of the hill before we would cross the depression and go to the ledge at a higher position.

Going up the hill was far from easy and at various places, we slipped and fell which caused bruises. Some of the smaller boulders, which apparently looked like beeing firmly set on the soil, slipped from their position now and then and we had to virtually inch our way up. We climbed something like hundred feet or a little more and then crossed the depression lying between the ledge and the main hill and then started moving along the contour. The tiger was somewhere in this area, but we did not know exactly where, as we had left its track below. Naturally our approach was now slower than even on that steep slope, where balancing became virtually a feat. I only hoped that the tiger had not climbed up more than we did and was waiting for us at a suitable higher ground to take us by surprise. Every few steps we stopped in silence to locate any possible sound betraying the position of the tiger before advancing forward.

After we had covered about 100 yards of such treacherous grounds, the tiger growled again from about 50 feet ahead of us. Now once the tiger was located, our apprehension of a sudden charge disappeared and I started inching towards the spot from where the growling was heard. The tiger had apparently climbed up just about as much as we had climbed and was now on almost level ground with me. Advancing forward to within about 30 feet of the spot from where the tiger had growled, I signalled my companions to throw stones at the tiger. Lahan was at my right and at a higher ground than myself, covering me. As the people behind me stoned the spot ahead, the tiger immediately growled and I waited for a possible charge. But contrary to my expectations, the tiger growled angrily for some time and then moved forward, which could be understood from his noisy movements. So we started advancing on his trail again in a similar fashion—myself and Lahan moving ahead of the rest of the followers.

When we had proceeded about 50 yards, the tiger growled again quite suddenly and as I wanted to look forward, suddenly the rock, on which I was standing slipped and I went down with the rock. The rifle had been held ready and during the fall, which must have been about 8 to 10 feet, I pulled back the safety of my rifle and banged the ground below. But before I knew, if I was hurt, I sprang mechanically back on my feet and looked forward with my rifle ready again. With the noise that I made along with the slipping boulder, the tiger growled loudly, but fortunately did not charge. As everything quietened, I felt pain on my left knee, which must had been the result of my fall. I moved my legs and

found that no serious injury had been caused, though the pain continued on my knee. Lahan also had a few falls, caused by slipping stones, but fortunately was not injured.

The tiger then changed his position again, this time quietly slipping further away. At this time we heard some voices near the bottom of the hill and were at first confused as to why people had collected there. I must mention here that at the bottom of the hill there was some flat land right in the midst of the jungle, which had been utilised by the villagers for cultivation, away from the village. On enquiry, we were told by the trackers that some of the villagers must have collected at the bottom of the hill, as they had heard our previous shots and probably presumed that the tiger was already dead. This was not only annoying, but even spelt danger, as the tiger may even choose to have a look at the opening below. So I instructed our trackers to shout warnings to their co-villagers that the tiger was very much alive and active. Besides we would have to fire and a stray bullet may be dangerous to them.

However, again we moved slowly ahead in the same old formation, myself and Lahan leading the way, followed by our trackers. We had advanced again for some distance, when the tiger warned us once more. Again I asked Lahan to go up a couple of feet and cover me from the height as I advanced. I inched my way very slowly and carefully. The area was once again covered with thick jungle, restricting the visibility to only a few feet ahead. The tiger was within about 15 feet, from where I stood, and was in all probability, watching the steps of his impertinent but steady persuer from the ground level. Here I found a rock, about 2 feet high and I climbed this rock to have a better look ahead. As I was looking very intently towards the bush, at the base of some bamboo clumps, where the tiger seemed to be waiting, some movement in the bush caught my attention. I saw the same bush moving, but I could not see any part of the tiger. All of a sudden with a fierce growl the bush shook vigorously and I saw something reddish emerging from the bush. In my reflex action, I swung my double rifle and squeezed one trigger.

When facing a charge from a fast animal like a tiger, one should hold his fire till the last possible moment, which I did not do, probably due to my tense mental condition at that moment, but all the same the result of my shot was encouraging, though frightening. With the bang of my rifle there was fierce and very loud growling of the tiger, as he rolled down the steep hill for about 8 to 10 feet. The bushes shook violently and the tiger forced his way up with repeated growls and breaking of branches of the bushes around. A bamboo also crashed with loud report as the tiger came up from where he had been hit by my bullet, moments earlier. The tiger then moved away noisily, making repeated throaty, gurgling growls. All along I was standing with my other barrel ready to fire, in case I caught a glimpse of the animal again. But I could see nothing of the tiger except the violent

movement in the bushes, though I was within only about 15 feet of the tiger, such was the nature of the undergrowth !

As calm descended on the scene after a while, I reloaded my empty barrel and withdrew a few steps to join all the members of the party. Some stones were thrown forward, towards the probable resting place of the tiger, but there was no response. So it indicated that the tiger had probably moved away again. But, I was absolutely sure that I had hit him quite squarely, as he was in the process of springing on me, which was obviously proved by the fact that he was thrown down the slope by the impact of my heavy soft-nose bullet. The throaty gurgling noise it made, also suggested that he was probably hit on his throat or chest region. We discussed the situation amongst ourselves and when I looked at my watch, it was 3-15 P.M. already.

The sun had disappeared on the other side of the hill and it was getting gradually dark inside the jungle. I suggested to Lahan that since the tiger was again hit, why not leave him for the night, as we were totally exhausted by now and there remained barely another hour of day light in that cold winter afternoon. But Lahan said, why not see a little further for another half an hour or so. It was not upto his liking to come out of the jungle without the ultimate goal reached. So we decided to proceed again.

As we were discussing, the Forest Guard approached towards the spot where the tiger was hit by my bullet and excitedly reported that he could see some big splashes of fresh blood. I called him back and approached the spot with Lahan, by my side, with utmost caution. Here we found fresh blood splashed over an area of about 8 to 10 feet in length and about a foot in width, like a red carpet. On our close examination we found a lot of froth in the blood, which proved beyond doubt that his lungs had been hit. A hill bamboo, locally known as Kako bamboo, which was about 3 inches in diameter and of about $1\frac{1}{2}$ in thickness (walls) was found to have been completely bitten off near the base by the tiger. This was something almost unbelievable as to how a bamboo of this size could be torn by a single bite of the tiger. But we had heard breaking of the bamboo ourselves and there were canine marks of the tiger on the bamboo wall. Marks indicated the tiger was thrown backwards and down by the impact of bullet, from where he dragged himself up.

We started to advance in our old formation again and our approach was halted after about 15' only by a depression ahead, where the cover was extremely thick and there was likelihood of the tiger hiding there. As we were in doubtful mind as to whether we should approach further, a tracker went up a tree and looked forward. He reported excitedly that he could see some portion of the striped body of the tiger in the depression. Even earlier some of them had reported likewise, which we subsequently found to be incorrect and hence I doubted his detection. But this time, he said, he was sure and so we asked the trackers to throw stones in the depression. A lot of big and small stones were thrown into the depression, as we stood ready, but there was no response.

So I advanced slowly upto the edge of the depression and looked in carefully to find, first the tail of the tiger and then parts of its body. With my rifle levelled, I waited for a long time, but there was no movement. The tiger was lying with its tail nearest (about 12 feet ahead) and the head farthest from me, though I could not see its front portion. I thought that the tiger was already dead, but to make sure, I signalled the trackers to advance and to throw stones at its body, while Lahan and I stood ready with our weapons. Our companions threw stones again and some of the stones actually hit the body. When there was no movement still, we were now sure that our dreaded enemy was no longer alive. Now we started talking jubilantly but the depression was a sudden drop of about 12 feet and we found it difficult to approach the dead tiger. Anyway, ultimately I went down the slope by clinging to some climbers and approached the tiger, with my rifle still ready. When within few feet, I observed carefully for a long minute or so, if there was any movement on the chest of the tiger, due to breathing. When I found that the body was absolutely still, I touched the dreaded animal and laid my rifle on his chest. All came down and our jubilation knew no bounds.

It was a big male tiger, just past his prime of youth and was in magnificent health. On inspection, we found that my first bullet from the 404 hit him squarely just above his right hind thigh. It made a neat hole in his right thigh muscle and hit his left hind thigh also. In his left thigh the bullet hit femur bones and crushed the bones completely, disabling him very badly. His left hind leg was virtually dangling from just above his knee and now I could understand why he avoided pressing home a charge in spite of all the provocations. My second bullet from the 500/465 crashed through his open mouth, breaking his left lower canine and entering his chest. This bullet had not come out of his body and resulted in his death. It seemed, my bullet caught him, just when he was pouncing on me, breaking cover for the first time. This means that, had my line of fire been inaccurate or had my old bullet betrayed me in that precarious moment the story could have been different and would probably be narrated by some one else! As I thanked my stars and kissed my rifles, a chill shiver went down my spine for the first time. From the very beginning, I was absolutely calm before the fierce snarling of the tiger, but now for the first time my legs denied to support my weight with apprehension and I had to sit down by the side of my unusual enemy, whom I came to know, for the first time in his death. Lahan, soon after also sat down and for the first time, complained of drying mouth and throat and acute thirst, which he said, resulted from realisation of the danger of our joint pursuit and from exhaustion.

As the trackers got busy in cutting some stout poles and collecting some vines to make arrangements for taking the tiger upto the jeep, Lahan and I sat near the enormous tiger, pondering over our past few days in incoherent bits. What a majestic lord of the jungle lay before us and what a tragic end! Lahan suddenly remarked, as if thinking aloud, "Just imagine, this poor fellow also grew up with his mother in these unfriendly jungles,

fighting against all imposed odds, and imagine, he also probably had family life, his fiancée and may be his children ! "My jubilation, at seeing the dead tiger for the first time had already waned down and now Lahan's remark made me morose, almost sick with a sublime guilty feeling of having had to destroy the jungle lord.

As our companion finished the initial arrangements, I shook off my morose feelings and directed them, how to carry the big load down. We were all together six persons at hand and all of us tried to lift the weight, which we failed, inspite of our joint best efforts. So we had to call the villagers, who had gathered below and were still present at some distance, inspite of our warnings. So people rushed up immediately and readily gave a helping hand. With the help of about 10 persons, we were ultimately successful in bringing down our rather unusual load to level ground. The tiger must have covered about 3 KM from the place, where he had been injured, but the road was now only about a kilometre away from us. We carried the tiger to the road and called for our jeep, which came in no time and then we had to spread the dead tiger across the bonnet of my jeep, at the request of the crowd, still swelling up in number. We then tied it on the bonnet and drove at a snails pace through the village, where we were stopped every few feet, as people patted the silken coat of the animal in loud acclamation.

An elderly man, in the village suddenly approached me excitedly, in tears of joy and blessed me, touching my head. He was the man, whose big bullock had been the last prey of the man-eater and this poor man had no means to replenish his loss. But as a true Assamese or rather an Indian he is, he took out a soiled one Rupee note, tucked in his loin cloth and pushed into my reluctant palm, saying that he would have liked to reward my hard job by presenting anything, he could afford ! Unfortunately he had only the Rupee with him and he would feel happy if I accept it, though he knew that the "Sahib", probably, does not need it at all. I took the Rupee note, which is, till to-day, my best ever reward of life and embraced the old man in an emotional hug. What a rare feeling of true satisfaction, in this materialistic present day world, which I may not experience again in my life !

As we approached the small tea-shop, where we spent the previous night, we had to halt again, as this shopkeeper would not let us go, before we had a cup of tea there. Practically the whole village had gathered there and the crowd became a problem. As we waited for the rewarding cup of tea, the tiger was brought down from the bonnet of my jeep and was loaded into the rear with lot of labour. This jeep had an extended body and even then it was full with the body of the tiger, somehow squeezed in. The rear springs of my jeep went flat and the whole back portion became lower by inches. We drank our tea and then bid goodbye to all our friends of the village and started off for Gauhati. But before leaving them, we warned them to be watchful for some time till we could tell them for sure that the actual man-eater had been killed. I am happy that no man-eating took place in this area afterwards.

The tiger was measured at Gauhati and it was 9'-6" along the curve. On skinning the tiger and later on making a post-mortem, I found out two L G. pellets from its right hind thigh muscles. There was some superficial injury on his skin, where the spot was hairless. The injury, seemed to me, to be about 2 and 3 months old. Except this he was perfectly healthy, without any other wound or disability. To trace the reason for this animal taking to man-eating my firm guess suggests that the animal must have been in agony due to the gunshot injury, when he was approached by his first human victim. Due to annoyance and being in short temper at the fateful moment, he attacked and killed the man, but left him there. Thus he probably found out to his astonishment and to our misfortune, what a delicate and defenceless creatures were these two legged animals, whom he had dreaded and avoided so long. Possibly he attacked his second victim, again due to annoyance and close proximity and this time he also tasted a little flesh to find it quite tasty. Here after he started killing people for his food. So here was again a case, where a careless shot from a gun of a so called "Shikari" caused so much loss of human lives and misery. I also reckon that the shot had been fired from a machan, as a result of which the tiger became extremely shy to light.

Grass-Tracer

By

SAROJ RAJ CHOUDHURY

Field Director, Simlipal Tiger Reserve

My students had been using the Tiger-tracer invented jointly by me and my fair cousin, Nihar, in October, 1970. Tiger-tracer is a simple thin glass plate, framed with four adjustable props. It costs hardly two rupees. Tracing is done on the glass plate and then transferred to a paper. Besides pugmarks, a wide range of other foot prints too, even of elephants can be tiger-traced.

Another simple equipment, a stave with a crosspiece and a length of string is used for the structural measurements of trees, shrubs, browse and grass. It also measures animal evidences, most frequently their inert faecal matter dropped *in situ*. It was devised by me in the field with the help of my students of the Wildlife Conservation Course, mid 1970 to mid 1973, at Dehra Dun. Although it is an equipment for multipurpose structural measurements of a range, my students suggested its name, 'Grass-tracer'.

Plate I shows the Grass-tracer in figure 1. The circular figure 2 gives the placements of the Grass-tracer in each millihectare plot of radius 178 cm, the length of the stave.

To construct the Grass-tracer a 187 cm bamboo has been found to be the most convenient in the field, light and tensile. It forms the main rod. While cutting the stave to size, the base end is cross-cut flush, conveniently below one of the thicker basal nodes. The top end of the stave may not measure upto any node: the crosscut here may be internodal. This internodal end cut of the bamboo stave has to be secured with a tight fitting plastic, rubber or metal cap.

At 120 cm from the base end of the stave a hole is drilled centrally through. A hole is similarly drilled at 35 cm on either side of the aforesaid hole.

A split bamboo is used as the crosspiece. It is 86 cm long and about 3 cm wide. A hole is drilled through centrally on the midline of the crosspiece and one more hole is placed laterally at either end on the midline of the crosspiece, 35 cm from the central hole. A wire nail is put through the central hole of the crosspiece and then through the hole on the stave. The extra thin end of the nail is bent tight to the side to secure the crosspiece to the stave. Thus fixed, the crosspiece can be turned to alongside or perpendicular to the stave.

Two filament strings (3 mm thick) of length 160 cm are cut to size and the cut ends fibers glued by heat. Each is then doubled equal and thumb knot is placed at the doubled end. The free ends of one of these two strings are then threaded through the top end hole

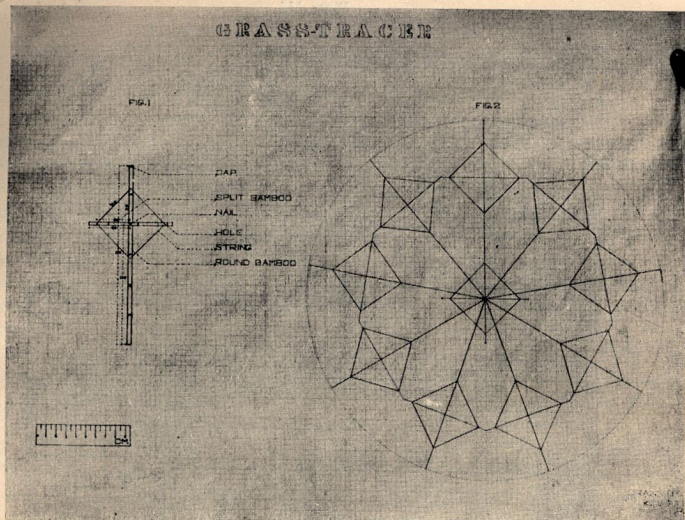
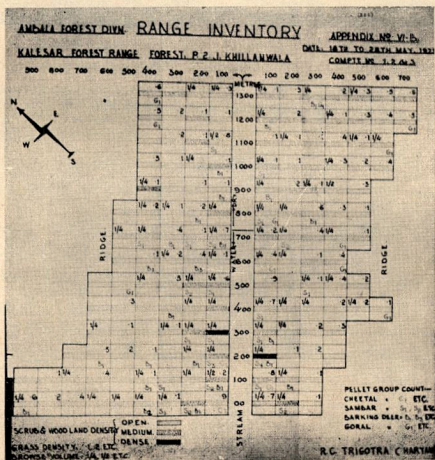


Plate II



on the stave from the side opposite to the crosspiece. The free ends of the string are then pulled through till the knot fits tight to the stave. The other string is similarly pulled through the hole, on the stave, at the lower side of the nail. Two half strings from the said two holes are coupled by a thumb knot placed exactly at 48 cm from the respective holes. The free ends are then passed back through one of the holes on the crosspiece and thumb knotted together at their ends, behind the crosspiece. The other two half strings are similarly coupled, knotted and drawn through at the opposite end of the crosspiece and then knotted together at their ends. When these coupled strings are drawn tight, the crosspiece will lie perpendicular to the stave to hold the strings 50 cm square. The extra lengths of the coupled strings are wound round the crosspiece and tugged to make this string frame rigid. The area of the square frame is 0.25 sq m. The Grass-tracer is ready for use.

A circle with the stave as its radius would describe one millihectare. By keeping the base of the stave at the centre of this circle, if the Grass-tracer were turned over its crosspiece round, a full circle, it would successively define nine peripheral positions of the 0.25 m² frame. The tenth frame would be concentrically laid with the circle as shown in plate I, figure 2.

In the field the stave alone held horizontal at the side of the belt gives the measure of 2 metres strip on either side of the transect line. A further measurement of two more metres on either side can be similarly done by stepping sideways to the first two metres point indicated by the top end of the stave. An eight metres wide belt-transect is thus measured. Ocular estimation is monitored by regular checks in the beginning, at 20 metres intervals.

The belt-transect is sampled in average lengths of 100 metres by regulated stepping, 150 steps equal to 100 metres. The regulation of the stepping is practised over a zebra-strip 100 metres long with 150 equally spaced strips. Field application of my students after such practice has consistently produced reliable measures that could be easily placed on the related maps. Small variation in the measurement of belt-transect reduced to the scale of the map is uniformly flexed or extended by an appropriately marked rubber string to coincide with known points on the map.

Sampling through each successive belt-plot, 100 metres long and 8 metres wide, on the belt-transect, take note of the major structural components — mainly indicator species— of woodland (higher than 5 m), scrub (1.8 m to 5 m), field level (15 cm to 1.8 m) and ground level (less than 15 cm) formations. The structural densities in each formation is symbolised: '=' for dense crop; '=' for medium densities and '-' for open stands. Inert evidences of only elephant dung boluses, gaur dung and other dung heaps if any are spatially recorded.

When the sampler reaches the 150th step, he sets the cross bar and the strings to active position on the stave. He then puts the base of the stave, the Grass-tracer, on the tip of his

150th step. Thereafter, he places the stave forward on the line of transect and the cross-barred string frame flat on the ground. He marks the point on the ground at the tip of the Grass-tracer and then looks into the 0.25 m^2 space enclosed within the string frame. If more than half this space is covered by grass and forbs at ground level he notes it as one, and if less than half, as zero. In the total assessment of the cluster of the ten subplots indicated by the frame, in the millihectare (plate I, figure 2), the number of units are added to provide the decimal ratio of ground level density in that millihectare.

While turning the Grass-tracer over its crosspiece to locate the nine peripheral subplots, the eight other points on the perimeter of the circle are marked on the ground like in the first measurement on the transect line.

The sampler unites and turns and the cross-bar alongside of the stave. He then stands the stave erect at each of the nine points marked by him on the perimeter of the millihectare plot. Thus done, he gets an idea of an imaginary cylinder at field level, standing on that millihectare plot. With such aid he is able to estimate how much of the volume in that cylinder is filled with foliage, not necessarily browse. He qualifies his record: $1, \frac{3}{4}, \frac{1}{2}, \frac{1}{4}$, or 0, according to the volume of the leafy space occupying that cylinder.

After completing the sampling of vegetation he comes back to the centre of the millihectare plot to search on the ground the pellet groups of animals that drop their dung pellets in a distinct group at each defecation. To do this he uses the stave as a marker through nine successive sectors, centre to the nine marked points at the perimeter. Specific pellet group can be easily distinguished interspecies, with practice. Any boundary line pellet group which is lying more than half inside the perimeter is noted as one, otherwise ignored. A distinguishable line of pellets defecated through the millihectare plot — happens when an animal eliminates while walking — is counted as one pellet group. Specieswise pellet groups are recorded separately for each millihectare.

Areas of sampling are selected, restrictedly randomised, in broad habitat types found in the range. Stratification of habitat types is ocular with the backdrop of experience. Topographical map in 1:25000 or larger scale facilitates, much, the stratification, sampling and subsequent plotting of the data.

Sampling in the identified area is done in systematic belt-cum-line plot system as described earlier. On flat or gently undulating ground the base line is compass oriented from as identifiable point in the map. On hilly terrain it follows the mala. Parallel belt transect along perpendicular bearing to the direction of the base line are sampled on either side of the base line at belt intervals of 150 steps. For efficiency, four to six hours work, according to cover density and terrain is reliably practicable within fatigue limits. 20 to 30 plots through a total length of 2 to 3 km belt sampling is the usual issue of a man-day work.

For convenience, work is started with forward bearing from the base line. After completing the sampling of half the aforesaid time-bound number of plots the sampler turns at right angle and paces 150 regulated steps to start sampling along the next belt, with back bearing, to end his days work at the line. Return to the camp is much easier thus. Plate II gives the picture of the resultant data on graph paper and plate III on a map.

Transects from two perpendicularly intersecting base lines would place the sampling in grid design as in plate III.

Radial transects are also taken from fixed points like permanent camps, salt licks, water holes, loafing grounds, permanently marked stations in grass lands and other strategically designed point molecules. Plate IV depicts such a design.

Belt-cum-line plot sampling with the help of Grass-tracer done in systematically repeated points of time through successive seasons gives dependable estimates of interseasonal changes and movements. When repeated interseasonal in comparable points of time through successive years, it gives reliable measure of the different trends, both of habitats and of a number of populations of the wild animals.

Specific pellet group densities sized to the average number of defecations per animal day and the time lapse till their complete obliteration in the field, give a measure of population density of the related species. Trend of such population densities of important primary consumers compared with the range trends provides the check on optimal densities, desirably proportional inters-persion, 'forage-hectare' requirements and interseasonal 'carrying capacities' in the stratified spread of habitats mentioned earlier.

The data collected currently in the Similipal Tiger Reserve is in the local language, Oriya. This simple methodology applied in vernacular, responds reliably through literate Forest and Wildlife Guards. Locally available manpower is utilised to produce much larger number of samples and increase the precision, than would be possible with limited application of expensive sophistication, technicians and expertise.

Planning for a 'Project Elephant'?

P.D. STRACEY

In the light of the recent rapid decline of elephants of the world in many parts of their range, the I.U.C.N. has felt the need for setting up an organisation to monitor elephant populations, both of Africa and Asia. Accordingly an 'Asian Elephant Group' has been formed under the auspices of the Survival Service Commission of the International Union for the Conservation of Nature (which is based in Morges, Switzerland) under the joint Chairmanship of Mr. J.C. Daniel of the Bombay Natural History and Mr. Robert Olivier, a Cambridge University ecologist presently based in Malaysia. A similar group exists for Africa, under the Chairmanship of Dr. Ian Douglas-Hamilton the distinguished elephant ecologist and author of the book 'Among the Elephants'.

The immediate objectives of the Asian Groups, which will have a study-life of three years effective from 1976, are to arrive at a correct understanding of the current status and future prospects of the elephant throughout its Asian territory, so as to lay down guide lines for the management of the habitats and the elephants they contain, for ensuring the survival of healthy breeding populations. For this, both extensive and intensive surveys will be necessary. The first meeting of the Asian Group has just been held in Bangalore, where preliminary reports of the elephant situation in Ceylon, Malaysia, Thailand and India were heard from persons with some knowledge of the respective areas. The members of the Group have now dispersed with the mission of setting up information-gathering nuclei in the respective regions. There are still large gaps in information on many questions and it is expected that in the forthcoming months a good start will have been made. The assistance of the Forest Departments will of course be sought but there will be need for biologists and ecologists to assist in the work of censuses, study of habitats and the factors that are destroying these 'homes' of the elephant and leading to the disruption of the migration routes, and the disturbances which are affecting the herd composition, numbers and breeding. Basic information will also have to be gathered from elephant catchers, hunters and even from poachers!

In India the elephant has received protection from the early days under the Elephant Protection Act of 1879, which has probably been the reason for its comparative abundance in spite of the several factors in recent years that have threatened it: the replacement of elephants by jeeps for transport and baggage carrying (there was a time when almost every District Official in certain States had an elephant for touring); the introduction of tractors for hauling logs in some forests; the disappearance of the *rajahs* and *zamindars* who kept elephants for ceremonial purposes and *shikar*, and so on. As a result of the general decrease in demand for elephants throughout the sub-continent because of them, there is a reduction of elephant catching. The well-known Mysore kheddass are no more, with the submersion of the catching sites by the Kabini dam, and the lack of demand for freshly

caught elephants at the *melas* and cattle fairs of Bihar—mainly the famous Sonepur *mela* of Purnea District in Bihar has resulted in less elephants being caught in Assam, the main source of elephants in north-east India.

But as against this favourable factors for elephants and their continuing abundance, there are very many unfavourable ones, the most important being the destruction of its habitat in all the corners of its range by felling of forests for agriculture, plantations etc. In addition there has been a ceaseless search for dam sites for hydroelectric and irrigation schemes, with the result that many ideal stretches of habitat in the river valleys concerned have been submerged, thus depriving the elephant herds of their feeding ranges and migrational routes. Karnataka may be said to be the worst offender, starting with the submergence of the famous Kakankote khedda site, and the result has been grave disturbance to the local elephant herds. Elephants react vigorously to such disturbing influences, for although the animal itself is very adaptable (the multi-purpose trunk being its most effective tool of survival) it is slow to give up its habitual travel paths in search of seasonal food—perhaps an attribute of its long memory, for they say that an elephant never forgets.

In Assam the clearance of the famous Nambor Reserved Forest (once the biggest reserve in India) in the years after 1930, when I first went there as a young forest officer, for settlement of people destroyed the main link between the Naga and Mikir hills which together formed the largest home for elephants in the Brahmaputra valley. I sometimes feel that I contributed to the decline of elephants in this part of Assam by the intensive khedda operations I conducted, of course as the result of a Government decision: I at one time, between 1935 and 1936, had as many as ten stockades in the area and we caught nearly a thousand elephants during those two seasons. But the IIInd World War and the enormous numbers of guns that passed into the hands of the Nagas also took their toll, for the Naga is one of the few tribals who relishes elephant meat.

In south India, the wonderful stretch of hilly and plateau country comprising the Bandipur Sanctuary of Karnataka and the adjoining Nagerhole Sanctuary of that same State, together with the adjoining Mudumalai Sanctuary of Tamil Nadu and the adjacent Wynad area of Kerala, had long been an extensive range for the south Indian elephant but, alas, it has been so fragmented by large encroachments for human settlement, particularly on the Kerala side, with the result that its future as a hinterland for elephants has been gravely jeopardised.

In the U.P. the elephants, which are located between the Ganga river to the west and the Sarda river to the east, are under pressure because the forests are wanted for bamboo production and their natural multiplication has not been checked by catching operations, which were traditionally carried out by the Balrampur Raj but which were given up a number of years ago. Recently, however, the Forest Department has started catching operations again utilising Assamese *phandis* specially brought across to U.P. The problem is to find a market for the elephants caught, though there is a fair demand from

foreign zoos and circuses. It is only in the southern State of Kerala that there is a steady demand for elephants, both for temple purposes and timber dragging. The Andamans is another locality where elephants are needed for timber work.

Thus, we can perceive only a dim future for the elephant, in India as elsewhere in Asia. A particular threat to the tusked elephant is the very high price of ivory, which is encouraging poaching. A flourishing ivory carving industry in south India, and to a lesser extent in Assam and Bengal, has placed a heavy premium on the head of a tusker elephant and it is felt that many elephants are being poached for ivory, on the Kerala border with Tamil Nadu and Karnataka particularly. A possible solution would be to resettle the ivory carvers in another profession (after all, they were originally workers in gold who were hit by the gold control order of some years ago) or to supply an artificial substitutes like plastic, for the ivory that is being used in the industry while at the same time banning the import of African ivory altogether. The latter would help the African elephant, the numbers of which have dropped catastrophically in recent years because it is suspected, of ivory poaching on a large scale.

All these currents and cross currents in regard to the fate of an attractive and lovable animal prompts me to ask where we are going? There are people who talk loosely about the increase of elephants in India and who even suggest that one day we shall have to control their numbers by shooting, as was done in Burma some years ago and was tried (experimentally) in Africa. They are unable to distinguish between an *apparent* increase in numbers and what they think is a *real* increase: the former is the result of the opening up of hitherto inaccessible areas by roads which encourage motorists to go where they never did before, and the fragmentation and dispersal of herds by dam projects, clearances for cultivation and so on. Only patient and careful surveys will reveal the true picture and in this the Asian Elephant Group will have to play its part, towards a possible 'Project Elephant'.

An Afternoon with Wild Dogs

PETER DAVIDAR

Every year during the breeding season of the dhole or Indian wild dog (*Canis lupus pallasi*), which is around Christmas, my father would go in search of their dens, in order to observe, study and photograph them. But last Christmas they came to us to den !

On 22nd December 1976 when we reached our week-end home in the jungle in the Sigur Reserve in the Nilgiris, near Mudumalai, our caretaker reported that a pack of wild dogs had killed a large calf belonging to the neighbouring village in the jungle nearby, earlier in the day. He also told us that they had been active in the area for over a week. So my father and I spent that evening in one of the tree top hides we have put up along the banks of the Sigur, which runs in front of our property, in the hope of seeing the pack. But no dhole came. On 23rd December morning we waited for the dogs but nothing happened. Then at about 11 in the morning when we were in the house, there was a big hubub outside. The wild dog pack had crossed the river into our property and had chased some calves grazing there across the river and hunted them. The cattle on the far side of the river got frightened, rushed back and joined in the general disturbance. Our neighbour's cattleman and my father rushed to the rescue of the calves. One of them a three month old calf was seriously wounded and the cattleman had to carry it back. The wounds it had received were interesting. There were four wounds, one deep; on its lip; three or four small bite marks on its forehead; a deep wound on the side, a little deeper and the belly would have been punctured and the most serious wound was on one buttock, where a large chunk of meat had been taken. What we did not know at that time was that the pack had succeeded in killing a larger calf within thirty meters of the other calf. The dogs hunted silently as they usually do, otherwise we could have intercepted them earlier.

That evening at 5.30 P.M. as we waited on a machan (which had a clear view of the river bed for 250 metres on either side) we saw a dhole appear on the opposite bank of the river, sit there for a long time watching and then cross the river about 75 metres below and go into the scrub jungle behind the machan. After some minutes another dhole appeared and it was equally suspicious and waited longer before following the first dhole. After about 15 minutes a pack of 6 dhole appeared and went in a line following the trail of the other two by scent. From their behaviour my father guessed that there was a den nearby.

Very early on 24th morning we went out again and sat on a machan lower down, overlooking the river and in level with the ground. After about 15 minutes of waiting we saw two dhole cross the river higher up. One more came behind us and probably made us out and retreated. They were obviously returning from the previous day's kill. We came back and ate a quick breakfast and were going back to the machan when suddenly I saw something red against the green background on the other side of the river. They were

dholes. I quickly hid to take photographs. They saw us and started moving away when my father called imitating the wild dog's whistle. The plan succeeded. Two of the dhole came and sat in front of us on the other side of the river, where I took some pictures. They were obviously waiting for the cattle at the cattle crossing hoping to repeat the previous day's performance. They seemed to know where their meal was coming from and when! This was new behaviour. They were learning quickly. We saw them do the same some days later. Then they moved lower down to join the others. I followed and took some more pictures. There were eleven of them. Then my Dad and I sat on different machans. After a while he went in search of the den. He was away for over half an hour. A solitary dhole dashed across the river 30 metres away, obviously disturbed. Later when my father returned he told me that he had disturbed the dhole in the jungle behind the machan, where he had found the den site some 200 metres or so away. This encouraged us to keep up our watch.

After lunch I went and sat on my usual machan at about 1-30 P.M. After one hour of patient waiting I was rewarded, I saw a solitary wild dog cross the river in front of me about 100 metres away. To attract the wild dogs for photography I called the whistling call of the wild dogs. It worked. I thought there was only one dog and did not expect any more. To my surprise two dogs were staring at me from behind. They were not sure what I was because I was well hidden. But they turned and bolted. I thought I had seen the last of them. But to my surprise, more started coming from the opposite bank, one by one. When they disappeared I called once more and again they came. This became a game between us. Two tried to sniff me out by raising their heads and sniffing loudly, but gave up. One particular dhole got excited and kept on whining and whimpering like a puppy whenever I called. This was the only dog that behaved in this manner. After a while two of the dogs lay down on the opposite bank about 30 metres from me and stayed there. Soon the rest of the pack came. They would lie in the water for a few seconds, get up, go up the bank, shake themselves dry and lie on the bank. This was to cool themselves. It was a very beautiful sight, the red dogs in the blue water against a green background. I wished I had colour film in my camera. But as it happened, the only Black and White film I had on me had been loaded the wrong way round in a hurry the previous night and was useless! It was probably a blessing in disguise, as I would have disturbed them otherwise.

After a while the pack gathered where the two dhole were resting and relaxed. To see them in such a state was a rare opportunity. Few get a chance to see this side of the wild dogs which are presented as blood thirsty killers. One dhole alone kept to the jungle on the den side and waited about 100 metres away. I thought it was also a breeding female standing guard or the leader looking after the dens and the pack.

The pack consisted of eleven dhole. They were more or less of the same size. But two may have been sub-adults. We had seen the same pack in different strengths—singly, in

twos, threes, sixes, eights, and in tens. They split up and rejoined frequently giving the impression that there were many packs. We ourselves thought that there were only five in our "home pack".

As they were relaxing the dhole which was whining and whimpering went to each and every one of them, even to the one which was away in the jungle behind me, whine like a pup, wag its tail, play with it, jump over it, go under its belly, press against it and beg for food, by pushing its mouth against the side of the others mouth. I believe this makes the other regurgitate food which the begging dhole eats up. This was probably a breeding dhole. There were, as far as we could see two breeding dhole. (This was later confirmed by the discovery of 2 dens). The two that led the way the previous evening. The wild dogs showed no interest in the buffaloes which at one time shared the same pool with them. The buffaloes also showed no interest in the wild dogs. They were also not frightened. The begging dhole got tired of begging and it too relaxed. During the two hours and more I spent with them they never urinated or defecated. Droppings were seen only at certain spots. These were probably used for marking or for showing the way and were not left indiscriminately.

My father who was coming to join me watched the scene from far and he guessed my predicament. So he approached the machan shouting like a cattleman. The pack let him approach close before moving away. We spent the rest of the evening on the machan for the pack to return. But it never did.

We spent several hours on the machans on subsequent days observing the wild dogs come and go; their hunting tactics; hunting time; the pack's visits to the den site; timing the visits; their behaviour and so on. But we could not be at the den site itself as we would have, not only disturbed the dhole, but would have given them away to the cattlemen who hate them and would have destroyed the young ones and probably poisoned the whole pack. But I never got another chance to be with them so intimately as on Christmas eve and it was an afternoon to remember.

When Orang-Utan panicked Zoo staff

BY

R.S. BHADAURIA, I.F.S.

Director, Kanpur Zoological Park, Kanpur

Though animal keeping in the zoos has become an old and established profession for zoomen, who have familiarised themselves to a great extent with behavioural peculiarities of most of the animals in captivity, yet there remain many unknown facets of animal's life. The task therefore of a zooman always remains a challenging one.

Many a time the animals, which have lived together in perfect harmony in the same enclosure, due to some interaction among themselves, turn out to be enemies and start fighting to the finish. Sometimes the new-born which are invariably nursed and cared for by their mothers, have to be rescued to safety from senile mothers. Obstinacy shown by some animals sometimes makes even an easy task, like moving an animal from one part of the enclosure to another or giving a medicine orally with food or water, difficult. Instances are also on record, when animals, having lived for quite some time behind the barriers in the enclosures, choose to come out and surprise their keepers, by meeting them outside the enclosure. Think for a moment when the deserter happens to be a tiger or a lion or some other big carnivora. Zoo histories are full of such instances, and it is at such times that zoo staff has to combine courage with care to confront such situations.

Quite a strange situation, we had to face, when I imported a pair of Orang-Utans in October last. The Orangs were flown from Amsterdam to Palam where I received them and to give them a day's rest and proper feed before transporting further to Kanpur Zoo. I decided to put them in Delhi Zoo. Looking at the wooden crates in which they were flown, it was quite natural to infer that the animals were docile. But still thinking that the quarantine cells in the zoo hospital may not prove strong enough to hold these animals inside, we selected a very strong wooden cage, kept in the hospital premises, in which a Rhino was transported sometimes back. This cage was fitted with strong iron bars all around and the flooring was of thick planks, heavily nailed together and also secured between angle irons (50 mm. size) welded together. By all standards, it was too safe a cage even for a Rhino, to say nothing of Orangs.

The Orangs, named Abeng—the male, and Dayang—the female, were released in to this strong cage for feeding and resting. Strict secrecy was maintained about the arrival of Orangs in the zoo otherwise innumerable visitors would have thronged around to see these great apes, which were the first to come to any Indian zoo. The Vet. officer of Delhi zoo was good enough to take charge of the feeding, which he tried as far as possible, according

to the diet chart received with the animals. The female ate better than the male, who very reluctantly tried only tit-bits and looked rather tired and dull. After having lived peacefully in the cage for about 7-8 hours, the male suddenly turned violent and started breaking the cage. When the attendant tried to coax him to calm down, he somehow gripped one end of an angle iron welded with the frame and broke it apart with one jerk. Not only this, he tried to scare away the approaching attendants by brandishing the broken angle iron, he held in his stout hands. Then to show his further prowess he started ripping open the thick wooden planks from the bottom side of the cage and when coaxed to stop he would spit and threaten with plank in his hand as if to beat, whoever approached him.

Since the zoo staff had never handled the Orangs before this, they got panicky as nothing in the cage seemed safe from the crafty and strong hands of Abeng. They also realised the danger, if this man-like beast come out of the cage. So they raised an alarm and soon the Vet. officer and the Jt. Director of Delhi zoo came rushing to control the situation. Fearing the escape of the Orangs, they started putting other heavy crates all around the Orang's cage, to block his escape, in case it succeeded in breaking the cage. Also some food mixed with a sedative was given, which luckily was consumed by the animal and it calmed down the animal a bit. Despite having reinforced the cage in the best possible manner, the male Orang had to be sedated further and a night long vigil had to be kept on him.

The behaviour of the Orang-Utan puzzled me and I worried because of the thought that if it was going to be so naughty, it would be a problem animal in the zoo. But I also knew that Abeng had been in Bristol zoo and I had seen his photograph with his keeper, before importing it. I therefore could think of only two reasons for the bad temper shown by Abeng. Either he was missing his keeper with whom he was too much attached or he was not liking the substitute Indian food to which he was not accustomed. Pinning my hope on the second reason more, I decided to offer a variety of food so that he could at least choose something out of that. Accordingly the next morning, we collected a good variety of seasonal fruits, tinned and fresh milk. When offered he did drink some milk and ate few bananas but showed clear preference for grapes. So we started giving grapes rather liberally to keep him in good mood. Also he was fed too frequently to keep him busy and calm. This trick seemed to work well. Next day he picked up more items like apples and fresh corn in addition to his favourite grapes. Thus on the third day when he appeared to have settled down, I decided to move the Orangs to Kanpur by road in a truck. The female was caged again in the same air-transport cage, but for the male, I selected another crate from Delhi zoo which was made for transporting bears.

Thus the historic, orang-couple of Abeng and Dayang reached their final destination—the Kanpur Zoological Park, in the early hours of October 28, 1976, after giving us many moments of joy and anxiety. After being released in a spacious and moated island in Kanpur zoo, the animals looked happy and contented. We also increased the variety of food-stuff to know their choice which helped us to chalk out their morning and evening menu. Now they have grown friendly with the keeper and others who look after them and would readily oblige you with a warm shake-hand by stretching out a hand through the bars from the cages attached to the island. As expected the news of their arrival in the city, started attracting large crowds. To most of the visitors Orang-Utans are something which they have neither seen before nor heard of.

Orang-Utans are one of the three surviving spp. of great apes, which in the scale of evolution are next to man and in fact belong to the same family—Hominoidae, of which man himself is a member. Unlike other two apes (Gorilla and Chimpanzee), male Orangs bear whiskers and beard and in facial expression too, looks more man-like. This is why this animal in Malayan language is named as Orang-Utan, which means—‘Man of the forest’.

Orangs are now found in rain forests of Borneo and Sumatra only, though millions of years ago they were abundant throughout South East Asia, parts of China and India. The deposits of their ancestor's remains have been found in Siwalik hills of Punjab.

They are fully herbivorous and arboreal animals and prefer to live on trees. For night shelter they make a nest on the trees and keep on moving and making new nest for each night's halt. Their hands and feet are well developed for grasping and climbing. On the ground they move quadrupedally with clinched fists.

At the age of 10-12 years, Orangs attain maturity for breeding and after a gestation period of 9 months, female delivers only one youngone. The baby Orang is weaned out after 5 years and then only female pairs again.

Orangs do not form large social groups. Instead only females with small babies and adolescents live in small groups which often break. Adult males prefer to live alone. Males have been recorded in the zoo to have attained weight up to 450 lbs. whereas female hardly attains half that much.

As a zoo exhibit, Orangs are always a star attraction in any zoo and one never gets tired of watching them, doing many acts and antics as if a human child has been left to himself in wilderness.



A dhole in the river

(See Page 35)



Abeng—The male Orang-Utan in Kanpur Zoo

(See Page 38)



Langurs Association with Chitals

Photo by—Atal Paul



Nilgiri Thar

Photo by—R.C. Davidar

Langurs' Association with Chitals

By

B.S. GURM, H.P. AGRAWAL, P.L. KANKANE

Zoological Survey of India, 1544-A, Napier Town, Jabalpur, M.P.

A perusal of literature reveals that very little is known on the association of langurs, *Presbytis entellus* (Dufresne) and Chitals, *Axis axis* Erxleben. Rahman (1973) briefly mentioned their food habits. This report is based on the observations made by one of the authors (B.S.G.) during the course of Survey to Kanha National Park and Bandhavgarh National Park in the years 1974 and 1976 respectively.

During the survey of Kanha National Park, an association of langurs with chitals was observed on several occasions in the month of February. A langur troop was sitting atop the branches, eating fruits and leaves of Amla (*Embllica officinalis*) tree and a herd of chital grazing nearby.

Again in March, 1976, during the course of survey to Bandhavgarh National Park, it was observed that a herd of chitals eating fallen fruits under the same Amla tree which was occupied above by a troop of langurs (two adult males, three adult females, two juveniles and two infants). It was interesting to note that chitals were eating the partly eaten fruits and leaves which were dropped by langurs. When one of us was gradually approaching the troop, suddenly, a langur spotted and started giving alarm calls. It was noticed that a herd of chitals which was grazing nearby ran away immediately, without reasoning to find the cause of the sound. Few of them stopped at a distance of about 140 metres and turned in the reverse direction to investigate the cause. After spotting, the chitals ran away.

The behaviour of the two groups of animals indicate, that during the period of drought, chitals face difficulty in procuring their food. Their association with langurs during this season helps them to obtain better and preferred food. Further, langurs sitting on high branches of trees were in an advantageous position to detect the approaching danger earlier than chitals in order to give a timely alarm call to their troop members for safety. The chitals make use of the alarm calls of langurs which enable the former to escape from approaching danger. During autumn, the association of chitals is mainly to avoid any such sudden danger.

Reference

- Rahman, H. (1973)—The langurs of the Gir Sanctuary (Gujarat). A preliminary survey. *J. Bombay nat. Hist. Soc.* 70 (2): 295-314.

Fauna of Corbett National Park

Introduction

By

B. S. LAMBA

Zoological Survey of India, Northern Regional Station, Dehra Dun

The first ever National Park in U.P. was demarcated under the "United Provinces National Parks Act 1934". It comprised of an area of 99.07 square miles in the Foothills of outer Himalayas in the famous Patli Dun and the hill forests to the South of it. It was named "Haily National Park", after Sir Malcolm Haily, the then Governor of U.P. After Indian independence, the Park was redesignated as Ramganga National Park, after the tributary of river Ganga flowing through the Park. Later, to honour the memory of Jim Corbett, the celebrated naturalist and hunter of 'Man-eaters' in Kumaon, the Park was renamed 'Corbett National Park'. With the coming into being of "Project Tiger" in the year 1973 the Park was declared as one of the nine 'Tiger Reserves' in India. In the mean while the Park had also expanded in size. Today the Corbett National Park covers an area of about 525 sq km, between 29°13' to 29°35' N.Lat., and 78°33' to 78°46' E.Long. The Natural forest of the park is confined to the Bhabar tract of Siwalik formation at altitudes of 380-1040 m, with varied topography of many temporary marshy depressions, ravines and plateau land. With the construction of a dam for the Ram Ganga Multipurpose Hydel Project at Kalagarh a large fresh water lake has sprung up engulfing about 10% of the Park area and almost 80% of the Savana type grassy glades in the hinterland of the Park.

The area abounds in all the major groups of terrestrial and aquatic (Fresh Water) animals known to exist in the Himalayan Terai, Bhabar and Foothills.

Approximately fifty endemic species of mammals are found in the area. Among the larger mammals the Tiger, *Panthera tigris*, the Leopard, *Panthera pardus*, the Indian Elephant, *Elephas maximus*, The Sambhar, *Cervus unicolor*; The Cheetal, *Axis axis*; The Hog Deer, *Axis porcinus*; The Muntjak, *Muntiacus muntjak*; The Wild Boar, *Sus scrofa*; The Red fox, *Vulpes vulpes*, and The Jackal, *Canis aureus* are noteworthy.

A large number of small mammals like Shrews, Hedghogs, Rufoustailed hare, Rats and Mice, Squirrels, Porcupine, Bats, Monkeys, Civets, Otter and Mongoos are found in good numbers.

The bird fauna is most colourful to be found anywhere in India and includes some of the best songsters. More than 500 subspecies of birds can be seen in the Park. A large number of migratory birds visit the area in Winter and Summer. Many pass through the area on their spring/autumn migration. A great variety of Water Birds, Waders, Birds of Prey,

Game birds, Doves and Pigeon, Parrots, Cuckoos, Owls, Night jays, Swifts, King fishers, Bee Eaters, Hornbills, Barbets, Woodpeckers, Thrushes, Shrikes, Drongoes. Minivets Flycatchers, Warbler, Babblers, Bulbuls, Thrushes, Pippets, Sunbirds, Munias, Finches and Buntings reside in the area throughout the year.

Among the Reptiles the two species of largest Indian lizards viz. The Gharial, *Gavialis gangeticus* and Marsh Crocodile, *Crocodilus palustris* find the place of pride. A variety of other lizards like the Rock and Garden lizards, the Veranus and the Mabuyas are also met with.

Snakes too are in good population. The deadliest of the Indian snakes i.e. the King Cobra, *Naja hana* and the largest i.e. the Python, *Python molurus* are both endemic and merit a special mention. In addition to the three groups of poisonous snakes i.e. Cobras, Kraits and Vipers a large number of non poisonous ornamental, grass and water snakes are also met with.

Some of the best Game Fishes of India like the Mahaseer, *Barbus tor* and Indian Trout, *Rainmus bola* abound the Waters of Ram Ganga flowing through the Park. The Rohu, *Labeo rohita* has recently been introduced in the reservoir.

Throughout the Park area exists a great variety of invertebrates belonging to the evergreen and semievergreen forest and fresh water biotope. The most abundant, of course, are the Insects. Some of the most colourful Indian Butterflies, Moths, Dragon flies, Damsel flies, Beetles, Bugs, Bees and Neuroptera are met with in the area. Among the other groups of invertebrates, a good assortment of Worms, Crustaceans (Crabs and Prawns), Myriapodes (Centipedes & Milipedes) and Molluscs is richly distributed in the area.

Although a number of faunal lists of the Kumaon and Garhwal hills area exist scattered all over the Indian Zoological Literature no Faunal Survey had been carried out in the proper Park area till recently. The enumeration of fauna of the Corbett National Park was undertaken by the Northern Regional Station of the Zoological Survey of India, Dehra Dun in 1973 at the instance of the forest department, Uttar Pradesh. During the years 1973-1975 three Surveys of a duration of about a month each, were carried out during different seasons. The following lists are based on actual observations, as made by specialists on various groups, in the Park at various times of the year and supported by recorded geographical distribution of the species; and supplemented by specimens obtained in the contiguous biotope. These lists are preliminary in nature and likely to be augmented further by further observations in future. The number of the groups covered are also limited to the number of specialists available at the N.R.S. Lists of other groups, not covered here, will follow as and when specialists of respective groups are available at the Northern Regional Station. The animal groups (including insects) covered here are as follows:—

I. VERTEBRATES :

1. Mammals.
2. Birds.
3. Reptiles : Snakes and Lizards.
4. Amphibia : Frogs.
5. Fish.

II. INVERTEBRATES :

6. Insecta :—

- a. Order. Ephemeroptera : Mayflies.
- b. Order. Odonata : Dragonflies and Damselflies.
- c. Order. Orthoptera : Grasshoppers, Locusts and crickets.
- d. Order. Isoptera : Termites (White Ants).
- e. Order. Hemiptera : Bugs.
- f. Order. Lepidoptera : Butterflies and Moths.
- g. Order. Hymenoptera : Ants, Bees and Wasps.
- h. Order. Coleoptera : Beetles.
- i. Order. Dermaptera : Ear wigs.

FAUNA LIST :

I. Vertebrates.

I. Mammals

By

B.S. LAMBA AND KRISHAN KUMAR.

Class	Mammalia
Order	Insectivora: Hedgehogs and Shrews.
Family	Erinacidae

1. *Hemiechinus auritus collaris* Gray: Long eared hedgehog.
Family Soricidae
2. *Suncus murinus tyleri* Blyth: House Shrew.
3. *Suncus etruscus micronyx* Blyth: Savi Pygmy Shrew.
Order Proboscidea: Elephants.
Family Elephantidae

4. *Elephas maximus* Linn.: Indian Elephant.
Order Lagomorpha: Hares and Rabbits.
Family Leporidae
5. *Lepus nigricollis ruficaudatus* Geoffroy: Rufoustailed Hare.
Order Artiodactyla: Wild Boars, Deers,
Sambar, Nilgai, etc.
Family Suidae
6. *Sus serofa cristatus* Wagner: Wild Boar.
Family Cervidae
7. *Muntiacus muntjak vaginalis* Boddaert: Barking Deer
Indian Muntjak.
8. *Axis axis axis* Erxleben. Chital or Axis Deer or
Spotted Deer.
9. *Axis porcinus* Zimmermann: Hog Deer.
10. *Cervus unicolor* Kerr: Sambar.
11. *Cervus duvauceli* Cuvier: Swamp Deer or Barasingha.
Family Boridae
12. *Boselaphus tragocamelus* Pallas (Nilgai)
Order Rodentia: Rats, Mice, Squirrels,
Gerbils, and Bandicoots.
13. *Petaurista petaurista albiventer* (Gray): The large Red flying Squirrel.
14. *Funambulus pennanti* Wroughton: The Northern Palm Squirrel.
Family Hystricidae
15. *Hystrix indica* Kerr: The Indian crested Porcupine,
Family Muridae
16. *Tatera indica indica* (Hardwicke): The Indian Gerbil
or Antelope Rat.
17. *Rattus rattus refescens* (Gray): The common Indian Rat.
18. *Rattus rattus gangutrianus* Hinton -do-
19. *Mus musculus tyleri* Blyth. The House Mouse.
20. *Mus musculus homeurus* Hodgson: -do-
21. *Mus booduga* (Gray): The Common Indian Field Mouse.
22. *Golunda ellioti myothrix* (Hodgson): The Indian Bush Rat.

23. *Nesokia indica indica* (Gray): The short tailed Mole
Rat or Bandicoot Rat.
24. *Bandicota indica indica* (Beehstein) (Large Bandicoot Rat).
Order Chiroptera: Bats.
Family Pteropidae
25. *Pteropus giganteus giganteus* (Bruinich): Indian Flying Fox.
26. *Cynopterus sphinx sphinx* (Vahl): Short Nosed Fruit Bat.
Family Rhinolophidae
27. *Rhinolophus cornutus blythi* Anderson: Little Japanese Horse Shoe Bat.
28. *Hipposideros cinereus micropus* (Peters): Leaf-nosed Bat.
29. *H. armiger armiger* (Hodgson): Great Himalayan Leaf-nosed Bat.
Family Vespertilionidae
30. *Myotis formosus formosus* (Hodgson's Bat).
31. *Pipistrellus mimus mimus* (Barret-Hamilton): Indian Pygmy Pteropidae.
32. *Scotophilus heathi heathi* (Horsfield): Greater yellow Bat.
33. *Plecotus auritus homochrous* Hodgson: Long-eared Bat.
34. *Murina grisea Peters*: Peter's tube-nosed Bat.
Order Primates: Rhesus Macaque, Langur.
Family Cercopithecidae
35. *Macaca mutata villosa* Trug: Rhesus Macaque.
36. *Presbytis entellus sehistaceus* Hodgson: Langur or
Entellus monkey.
Order Carnivora: Fox, Wild Dog, Bear,
Otter, Civet, Mongoose,
Striped Hyaena, Cats, Leopard & Tiger.
Family Canidae
37. *Vulpes vulpes montana* Pearson: Common Red Fox.
38. *Canis auratus* Linn. Asiatic Jackal.
39. *Cuon alpinus primasvus* Hodgson: India Wild Dog or Red Dog.
Family Ursidae
40. *Salenarctos tibetanus* G. Cuvier: Asiatic Black Bear.
Family Mustelidae

41. *Lutra lutra monticola* Hodgson: Common otter
Family Uiverridae
42. *Viverricula indica* Wellsi Pccock (Small Indian civet).
43. *Paradoxurus hermaphroditus* Bondor Desmarest:
Common Palm Civet or Today cat.
44. *Paguma laroata gravi* Bennett: Marked Palm Civet.
45. *Herpestes edwardsi nyula* Hodgson: Indian Gray Mongoose.
Family Felidae
46. *Felis chaus affinis* Grey: Jungle Cat.
47. *Felis bengalensis horsfieldi* Grey: Leopard Cat.
48. *Panthera pardus* Linn.: Leopard.
49. *Panthera tigris tigris* Linn.: Tiger.

"Breeding Emu. *Novaehollandiae*, at Delhi Zoological Park" published in Cheetal Vol. 18 No. 1 & 2.

Dr. J.H. Desai, Joint Director, Delhi Zoological Park send the following note in continuation of the above.

"Out of the eight Emu chicks hatched during March, 1975, one pair was sent to Ahmedabad Zoo in exchange. During November, 1976, two pairs were observed to mate several times and subsequently, the two females laid a total of 38 eggs in two clutches and their male partners are incubating the eggs".

On herd-discipline in Indian Elephant, *Elephas maximus* Linnaeus

By

B.S. LAMBA

Northern Regional Station, Zoological Survey of India, Dehra Dun (U.P.) India

My liaison with the wild elephants is neither very old nor very intimate. In fact I have started taking interest in them since my involvement in a 'Man and Bio-Sphere' Project being carried out at the Corbett National Park since April, 1976. My commitments to the said project require my presence in the Park for about ten days in a month. During my monthly sojourns and whenever an opportunity arises I love to watch the herds of wild elephants that roam about in the park. The herd behaviour always fascinates me. On two different occasions, I was a witness to some very interesting episodes involving male members of two different elephant herds which I would like your readers to evaluate and comment upon.

The first incident occurred on 23rd of December, 1976. It was rather late in the afternoon. We were having tea at FRH, Gairal when the chowkidar informed us that a herd of wild elephants was crossing the stream next to the Forest Rest House. All the nine of us scrambled for the para-pet wall of the rest house overlooking the stream. The herd had already crossed the stream and was entering into a dense sheeshum island on the opposite bank. Twelve animals including two tuskers and three calves could be counted. The smallest of the tuskers who had tusks about 30 cm long was perhaps the last to cross as he was nearest to the stream. On hearing us he turned right about and stood watching us. The rest of the herd in the meanwhile disappeared in the thicket. This mutual observation lasted for a couple of minutes. After which period another tusker, a large one, emerged from the thicket and approached the tusker that stood watching us. The bigger tusker halted a couple of metres from the smaller one, turned sideway and stood watching him for a few seconds. The smaller tusker, as if obeying a silent command, turned round and proceeded towards the thicket. After going a few paces he stopped and turned again to watch us. The bigger tusker who was following him also stopped. The two stood there the smaller one watching us and bigger one watching him, for what seemed to be a good part of a minute. The smaller tusker then started moving in our direction. As he came abreast the large tusker the latter raised his trunk and slapped the smaller one across the back. The slap was followed by a good nudge by the head pushing the smaller tusker in front towards the thicket. The curious one was thus unceremoniously herded towards the rest of the herd.

The second incident was witnessed at Dhikala on May 4th, 1977. It was about 5 p.m. We were counting Cheetal herds, for herd-composition analyses from a closed vehicle when

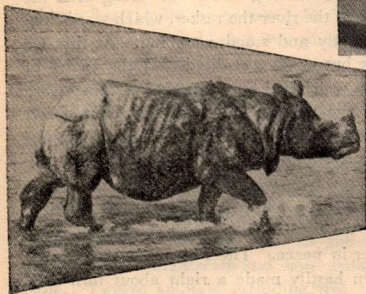
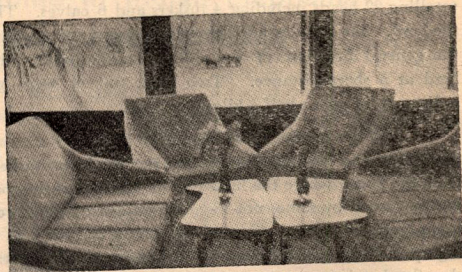
we noticed a herd of elephants which was feeding in the 'Chaud'. It was a big herd totalling 22 heads including 4 tuskors and 6 calves. The largest of the tuskors was leading the herd. The females and the calves were grazing scattered about but facing and following the general direction of the river. Another tusker, the second largest, was following the herd at a short distance. Two other tuskors were grazing and following the herd at a distance of about half a kilometre.

In order to watch the herd from a safe distance and in the hope of getting some clear pictures of the herd when it crossed the road we parked over jeep about 150 metres away from the point where the herd was likely to cross the road. A patient wait of about an hour was rewarded by some not-so-good pictures of the herd crossing the road. Long after the main herd had crossed the road and proceeded towards the river the tusker, which was bringing up the rear gaurd, crossed the road, turned slightly and stood watching. At first we thought that he was taking objection to our presence but we soon realised that the centre of his attraction was not our vehicle but the two tuskors which had been left behind. They were both approaching slowly. As they neared the road the waiting tusker turned about, faced them and stood watching with the tail curled and the trunk slightly raised. On reaching the edge of the road both the tuskors stopped, one behind the other. After a short while the one in front started moving slowly, crossed the road towards waiting tusker while the other hesitated on the opposite side of the road. Suddenly the waiting tusker started walking towards the tusker crossing the road. Momentarily we were thrilled with the anticipation of a possible clash. But the two crossed each other in peace. The tusker, that had stood behind to cross the road, first froze in his tracks then hastily made a right about turn and fled. The waiting tusker who had now crossed the road transformed into a chasing tusker. It chased the fleeing tusker till both of them were lost to our line of vision. While this chase was going on first of the two tuskors who had already crossed the road retraced his steps and slowly followed the fleeing pair. The huge tusker, who had already covered about 300 metres in the direction of the river along with the rest of the herd and had stood silently watching all this melodrama now started back towards the road, crossed it, and followed the other three for another 50 metres or so. He then stopped, kept on watching the direction in which the first two had vanished, for a while and finally returned to the herd which had all this time kept on grazing and moving towards the river. It was almost dark by now. So we too called it a day.

To me and my colleagues, who were present on both occasions, these incidents appeared directly concerned with herd discipline, or rather disciplinary action against the errant members of the herd. The possible error in the first case could easily be discerned but in second case it has to be assumed. I shall be grateful to such of your readers who may like to comment upon or explain these incidents.

Have a drawing-room view of wild animals

VISIT



**JALDAPARA
WILD LIFE
Sanctuary**

- *Home of One-horned rhinoceros.
- *Gaur, elephants, tigers.
- *Varieties of deer and other animals.
- *Furnished Tourist Lodges with full catering arrangement.
- *Approachable by Road, Train and Air.
- *Jeep available.

Please contact :—

DIVISIONAL FOREST OFFICER

COOCH BEHAR

(Phone C.B. 247)

WEST BENGAL

OR

FOREST UTILISATION OFFICER

8, Lyons Range, CALCUTTA

(Phone 22-2774)

WEST BENGAL

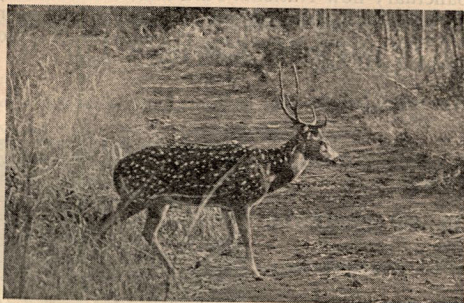
A tree is known by the fruits it bears;

A forest is known by the animals it rears.

Come and see it for yourself

Visit:

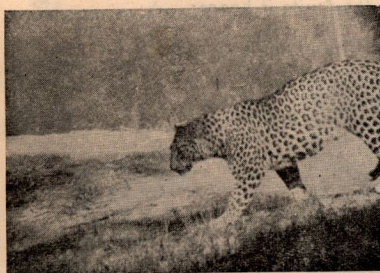
PALAMAU NATIONAL PARK
&
HAZARIBAGH NATIONAL PARK
IN
BIHAR



For details please contact:—

1. Divisional Forest Officer,
Daltonganj South Division,
At & P.O. Daltonganj,
Dist. Palamau (Bihar).

2. Divisional Forest Officer,
Hazaribagh West Division,
At & P.O. Hazaribagh,
(Bihar).



Uttar Pradesh's
Twin Attractions

FOR LOVERS OF WILDLIFE
CORBETT NATIONAL PARK
DUDWA NATIONAL PARK

Corbett National Park is famous all over the world for its scenic grandure and its wildlife—elephant, tiger, deer (several species) and a host of other mammals, birds and reptiles—the Ghariyal and snubnosed crocodiles and the mighty “Mahasheer” fish.

DUDWA Sanctuary now National Park famous for its only surviving herd of 2000 Swamp deer, Tiger, Spotted deer, Sambhar, Hog deer, Barking deer, Sloth bear, Wild boar, Marsh crocodile and hundreds of colourful birds. It is a paradise for bird watchers. *Conducted tours arranged.*

All Amenities provided.

Write to :—

CONSERVATOR OF FORESTS

Wildlife Preservation Organisation

17, Rana Pratap Marg,

LUCKNOW

Tel : Wildlife :: Phone : 26140



President:— Col. Pratap Singh
Malvendra of Nabha

Executive Vice-President:—Shri T.S. Negi,
I.P. (Retd.)

Hony. Secretary & Treasurer:—Dr. R.N. Misra

Hony. Asstt. Secretaries:—

1. Dr. S. K. Sangal.
2. Shri S.K. Sinha
3. Shri N.K. Gaur.

Delhi Branch

President:—Shri Pratap Keshari
Singh Deo of Kalahandi

Exe. Vice President—Col. Sher Jung,
A-2/4 Model Town, Delhi

Hony. Secretary:—Commander K.N. Bahl
G-28, Nizamuddin West, New Delhi.

Assam Branch (Shillong)

Hony. Secretary:—Mr. M.A. Islam, I.F.S.
Chief Conservator of Forests, Assam
(Gauhati)

Bihar Branch (Monghyr)

President:—Kumar Surindra Singh
Tal Kothi, Gidhaur

Editorial Board

1. Dr. R.N. Misra.
2. Dr. S.K. Sangal.
3. Shri K.C. Sahni.
4. Shri N.K. Jain.

Buy from the Hony. Secretary, Wildlife Preservation Society of India 7, Astley Hall, Dehra Dun.

	Price
(1) Society's Tie (with Cheetal head in gold on green silk) ...	20.00 each
(2) Balance of Nature Game (for Members, Postage extra) ...	9.00 „
(3) 'National Parks' by K.S. Sankhala, I.F.S. (Published by W.L.P.S.I.) (Post free) ...	10.00 „
(4) Singh Parivar in Hindi by M.D. Chaturvedi ...	3.00 „
(5) Panther on the Prowl by M.D. Chaturvedi ...	3.25 „
(6) CHEETAL—I.U.C.N. Special Souvenir Issue, 1969 ...	7.00 „
(7) „ „ „ „ „ 1972 ...	5.00 „
(8) Back Numbers of Cheetal ...	7.00 „

Wildlife Preservation Society of India

1. The aims and objects of the Society are :—

- (a) To promote interest in and impart knowledge regarding the preservation and conservation of all forms of wildlife, particularly among the youth of the country
- (b) To co-operate with the Govts. of India and States and with other Societies and Institutions having similar aims and objects in working for the interests of wildlife.
- (c) To assist in enforcing and actively supporting the Forest Acts, Wild Birds and Animals Protection Acts and Rules etc. of States and the Indian Arms Act and Rules in so far as they pertain to wildlife and to bring to the notice of the authorities any infringement of the same and to assist in the detection and prosecution of offenders in respect of such laws.
- (d) To advise and help the Govt. and wildlife administrators in the formation, maintenance and protection of Sanctuaries and National Parks, the preservation of wildlife in general and rare species of India in particular and in the introduction of exotic species into the country, the rehabilitation of rare species etc. and in the revision on rational lines of the shooting and fishing rules, so as to conserve and increase wildlife stocks.
- (e) To raise funds for the carrying out of the above aims and objects and to found and maintain museums, reading rooms and libraries of natural history in order to disseminate knowledge regarding wildlife.
- (f) To promote sportsmanship in shikar and to recognise well regulated shooting and fishing, as a means of preserving wildlife and fish so that through wise use the surplus may provide a recreational asset to the nation.
- (g) To carry out publicity and propaganda for the preservation of wildlife in India by means of monographs, journals, films, film strips and other feasible methods.
- (h) To assist members of the Society in obtaining shooting and fishing facilities and facilities for viewing and photographing wildlife in India
- (i) To conduct research into the problem of Wildlife management in India, and in pursuance of this, to initiate, encourage and, where possible assist in projects for the study of threatened species and related subjects and to provide reference and research facilities for such work.
- (j) To carry on such other activities which will serve the above subjects.

What membership of Wildlife Preservation Society of India will entitle you to ?

1. You will become an active member of the growing group of Wildlife enthusiasts, who enjoy working for and spreading the knowledge of how to conserve India's heritage of Wildlife for posterity.
2. You will be entitled to the full use of the Library of the Wildlife Preservation Society and of its reading room.
3. You will receive a membership certificate.
4. You will receive personal Identification and Membership card.
5. You will be entitled to buy all publications of the Society at a concessional rate.
6. You will be entitled to buy at concessional rates the Society's Tie, and the Balance of Nature Game (specially published in colour for its educative and recreational value).
7. You will be supplied "Cheetal", journal of the Society free.

For membership particulars write to Honorary Secretary, Wildlife Preservation Society of India, 7 Astley Hall, Dehra Dun.